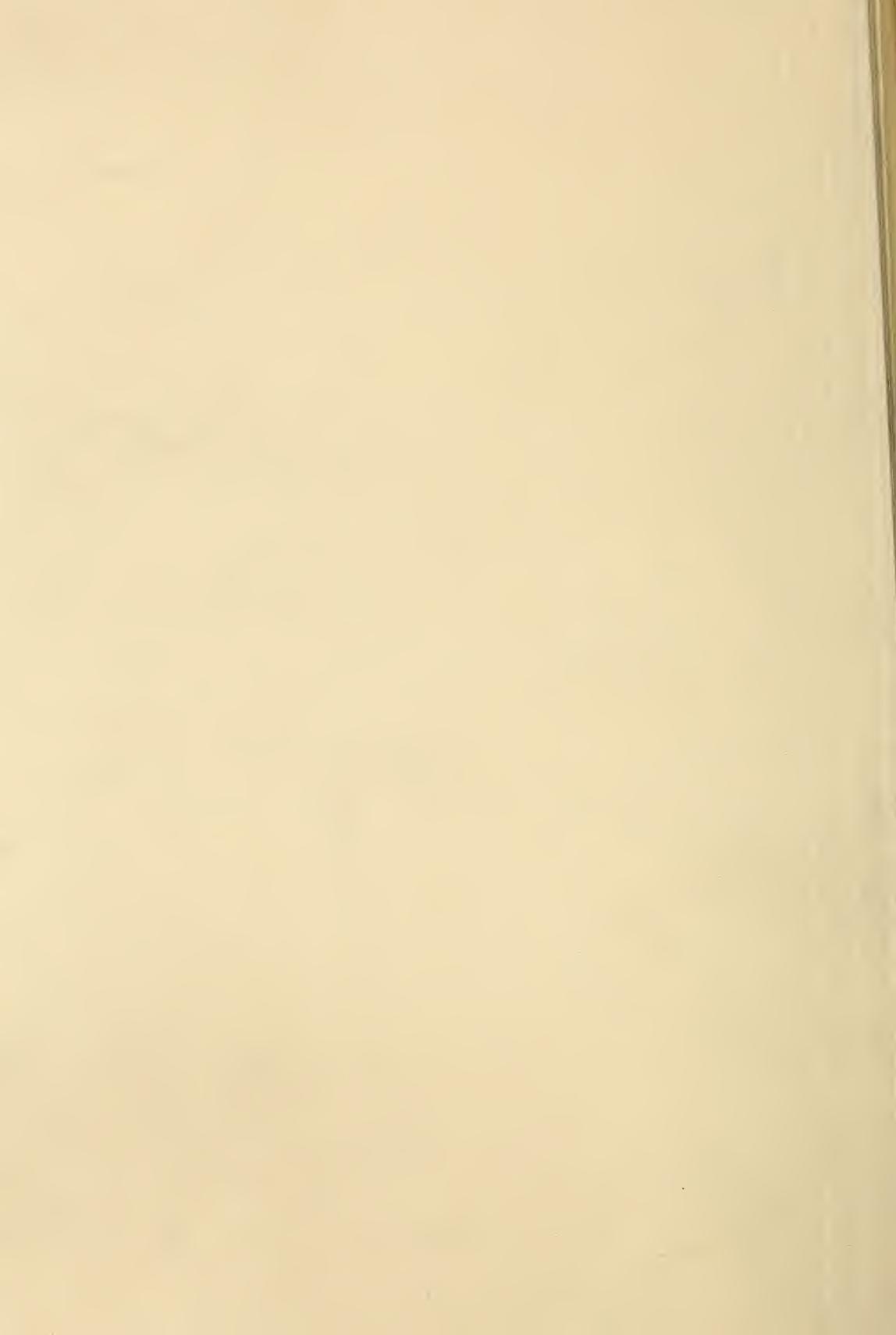


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GLEANINGS OF BEE CULTURE

A JOURNAL
DEVOTED
TO BEES
AND HONEY
AND HOME
INTERESTS.

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No. 13.



WILL THE FRIENDS who think bees of choice select too oll larvæ for queen-rearing please make some careful observations regarding the matter, and report? It is not a matter of reasoning, but a matter of fact.

PLEASE UNDERSTAND that cell-cups with small bottoms may be just as large as those with large bottoms. Very soon the larva is floated out of the small part, and then it makes no difference how small it had been.

IN DISCUSSING shade for hives, p. 474, the comfort of the bee only is considered. I care something for that, but my chief reason for wanting shade is to have a comfortable place for the bee-keeper when working at the hives.

IN HIS VIEW that it is better to let a swarm build its first five combs without foundation, G. M. Doolittle is supported by no less an authority than the lamented C. J. H. Gravenhorst. But that's a new wrinkle of Doolittle to set off the five frames not till two days after hiving. No doubt he has a good reason for it. What is it, Bro. D.?

THOSE "GOBLET" cell-cups of Pridgen's are all right. He fastens them on the cell-bar by pressing them down upon two headless nails projecting $\frac{1}{16}$ inch. In "this locality" we make a good and rapid job by dipping the bottom of the goblet in melted wax and setting it on the bar. [Those goblet cell-cups are as near perfection as any thing can be.—ED.]

SOME SAY apple-bloom honey is good in color and flavor; others say not. It is possible these latter have cherry and plum mixed with their apple honey. [There is a possibility that honey from cherry and plum has a strong bitter taste that honey from the apple-tree has not. This might account, as you say, for the variety of opinions as to the quality of such honey.—ED.]

UNCLE LISHA has taken up an exceedingly important theme, "breeding for improvement," and he's handling it well. A point to

be emphasized is that it is not merely professional queen-breeders that should be working for improvement by selection, but *every bee-keeper* that has more than one colony of bees. [A great deal can be done by selection. See editorial in this issue on red-clover and long-tongued bees.—ED.]

"I DO NOT BELIEVE a particle of nectar is deposited in the daytime," says A. J. Wright, p. 479. How about those who say they have seen it? For example, A. I. Root, in A B C, under "Figwort," says he saw the tiny drop of nectar form over and over again after being licked clean by the bees. [So have I seen it, not only on the figwort but on the spider-plant.—ED.]

AN EPIDEMIC seems to prevail nowadays in the way of getting up new bee-diseases. Foul brood and diarrhea used to hold full sway; now we have at least two new diseases that are named, with one or more not yet christened, and dear knows how many more are to come. [We have had these same bee-diseases before, but now we are getting to know our friends the enemy.—ED.]

IF PHILO WOODRUFF had known beforehand of that picture on page 474 he probably would have put those hives in straighter rows. [Tell Philo that I am liable to come around with a camera at almost any time; but, seriously, I like to catch our bee-keeping friends off their guard—not fixed up for the occasion, but in their every-day year-in-and-year-out way of doing things.—ED.]

SPEAKING of robbing, many times the very best thing is to do nothing. When robbers get started on a week queenless colony, it is about as well to let them finish up first as last. If there is much honey in the hive it can be taken out, leaving just a little for the robbers to finish up. If the colony is strong enough to be worth saving, giving it a queen will make it pluck up courage to defend itself.

THE SEASON has been remarkably cool. Clover bloom yielded nothing till four weeks after first bloom, but is now yielding slowly, beginning about June 18. [It is a comfort to know that clover is not an entire failure in your locality, for I am afraid it is so in many places. The clover in your vicinity has a fash-

ion of beginning slowly, and keeping up a continuous flow for a considerable length of time. Success to you.—ED.]

FOR SMOKER FUEL, L. Highbarger uses cotton waste that train men have thrown away along the railroad after it has been used on car-axles. I've been using it, and am much pleased with it—lights easily, burns long, and makes a good smoke. But it is black and greasy, and unpleasant to handle. [Yes, cotton waste would make first-class smoker-fuel; but where do you get it—by tramping up and down the railroad tracks, or by begging it of the railroad men?—ED.]

YOU ARE AFRAID, Mr. Editor, E. F. Pittmann's foundation would bulge. I don't believe it would if the main part of the foundation has space enough between it and the bottom of the section. You see the bulging would all be done by the little part. If the entire edge touches the bottom, it will bulge sure. His plan makes sure that the section is fastened sufficiently at the bottom to make it safe for shipment, but I should not expect the entire bottom to be built down as well as with bottom starters.

YE EDITOR says cross-bred bees are as good for comb honey as Italians, and some prefer them. Of two colonies harvesting an equal crop, I'd much rather breed from the Italian. The result will be more uniform. If the cross is *enough better*, then I'd take the cross to breed from. I shouldn't get as even a lot, but I would average more honey. [While I believe that hybrid bees are as good for comb honey as the Italians, yet I would always breed from the latter stock, for the bees will turn into hybrids soon enough without trying to breed them.—ED.]

"WE ARE TOLD that the Hoffman frames can be picked up in pairs; and what of it if they can? How often do you want to pick them up in pairs? And what do you want to pick them up that way for?" says M. W. Shepherd, p. 478. We want to pick them up in pairs as often as we want to take two frames from one hive to another while one hand is occupied carrying the smoker. We want to take two or three at a time to avoid the extra trip that would have to be made if only one at a time were taken. I can carry two or three loose hanging frames in one hand, and I can hurt my fingers pretty badly by it too. [Just so.—ED.]

IF CANKER WORMS work on lindens the same as on apple-trees, it will pay to spray that linden orchard at Medina. Within view of where I write, hundreds of apple-trees were killed outright by canker worms. The first year didn't seem to hurt the trees much, for they sent out new leaves after the worms stripped them; but the fourth year finished them. Other trees right beside them were sprayed, and saved all right. I think they were sprayed only once or twice in all. [Goodness me! We have about 3000 basswood-trees in our basswood orchard that are anywhere from 15 to 30 feet high. To spray that whole orchard would be a job, to say nothing of the expense for chemicals. If the worms come

back next season, as we fear they will, we shall be prepared to give them fits.—ED.]

YOU ARE MAD, Mr. Editor, because I don't tell whether I think bees sometimes sting without stopping to feel where they sting. I don't think a little thing like that should break our friendship, and I would just as soon tell you as not. Some people would get mad, and be too stubborn to tell you; but I'm not one of that sort, and, as I said, I'd just as soon tell you as not; but the fact is, I don't know. [Just like you. I am mad because you fooled me again. Did you never have a hybrid make a dart from a hive, like a bullet, and strike its sting the moment it touched your person? Unless I am very much mistaken, the instant the bee's feet touch, the sting is doing its work. This is not invariably the case, but under some conditions, as after a sudden snap or jar of the hive on a cool day. Now, Dr. Miller, what do you *think*, if you don't *know*?—ED.]

WHILE BELGIAN HARES are having such a boom, some one tell us how big an inclosure they must have. Must it have a floor? How protect from dogs? [The Belgian hares that I saw in Colorado were confined in pens about six feet square, I think with floor bottoms, with poultry-netting tops. The wood bottoms will be necessary to prevent the hares from burrowing out, and the netting is probably to keep off dogs and cats. The animals can be grown in small inclosures, if supplied with plenty of green stuff, very successfully, I understand; but, like every thing else when grown in large numbers, they do not do as well. Every poultry keeper knows it is one thing to take care of and grow successfully a dozen hens and a rooster, and quite a different thing to manage ten times that number. The same proposition holds true in bee-keeping, and I know no reason why it should not with growing Belgian hares. The hares can be raised wherever it would be possible to keep chickens, and they will stand much closer confinement. Now, please understand that I have had no personal experience with these hares. These statements are all based on what I have learned from different sources. On the other hand, there is no question but that Belgian hares are having a great boom. Like every thing else that has a boom, extravagant statements are made.—ED.]



The sun has reached the Cancer's line,
And summer has begun;
All nature teems with active life,
The bees in concert hum.

AMERICAN BEE JOURNAL.

A few weeks ago the New York *Mail and Express* printed a fake yarn to the effect that it is customary among bee-keepers to feed their bees with glucose and sugar, and that

the bees "do nothing the livelong summer but pack glucose into their hives from an open barrel left standing close by." This matter was fully reviewed in this department on page 339. This nonsense was copied by the editor of the *Farm, Field, and Fireside*, who crawls out of it in this way:

"All this is sad if it is not funny. If there is a child six years old who reads the *Farm, Field, and Fireside*, and who does not know that the bee makes over what it gets from the flower, or from the feeding-tray, and produces real honey; and if there is any one of our readers that did not see the 'pleasantry' in the glucose story, we certainly recommend to them a vacation, and a little free air and sunshine. They are working too hard. And our good friends of the *Journal* need to cheer up and expend a little of the proceeds of their industry in making a good bee-paper, in a platine in the country. We should be pleased to join them in a good old-fashioned bee-hunt, such as we used to have with our father, either in apple-blossom time or later, when the goldenrod is out, and the bees are happiest."

Mr. York shows up the whole fallacy of this "pleasantry" business by showing how much evil a similar statement caused bee-keepers some twenty years ago. He winds up by saying:

It is to the credit of the *Farm, Field, and Fireside* that it has done its part toward discrediting the "poor joke," and it would be still more to its credit if it could have made a manly retraction without the attempt to bring ridicule upon those who made a proper protest against its unintended injustice.

It is to be hoped that good, and good only, will come to the six-year old readers of our esteemed contemporary from its wholesale recommendation of a vacation, for it is certain that not one of them knows "that the bee makes over what it get from the flower or from the feeding-tray and produces real honey," seeing that even a brilliant six-year-old can hardly know what is not true.

Even in the time of Solomon such men were living. He says of them: "As a mad man who casteth firebrands, arrows, and death, so is he that deceiveth his neighbor, and saith, Am not I in sport?" They call it "pleasantry" nowadays. Any newspaper clipping that imputes to a large number of respectable people, or all of a trade, a criminal way of doing business may be set down as a malicious slander.



EL COLMENERO ESPANOL.

It seems they are having trouble with bees in Uruguay in the public scientific schools. The following item in *El Siglo*, dated April 3, from Palmira, Uruguay, is translated from the Spanish, and it certainly constitutes good reading:

There is much comment anent the disposition of the Auxiliary Commission, which has ordered the removal of apiaries from agricultural stations, alleging that the bees are prejudicial to agriculture, while the scientific stations are of entirely the opposite opinion. There is now in vogue in the Uruguay station the North American system of apiculture, which is of much importance. It is the first one installed in Uruguay.

This is followed by a most vigorous and able defense of the bee as the best friend of the farmer and orchardist.



BRITISH BEE JOURNAL.

The great number of announcements of "Shows to Come" in England indicates that the interest taken by bee-keepers in such ex-

hibitions is not only maintained but extending. This helps greatly to bring British honey to the public notice. The confectioners of London have a grand display of eatables there in September, and this is to be followed by an exposition by the grocers. At these exhibits honey will be made a great feature.



In speaking of honey, Mahomet says, in the Koran, "This sweet, wholesome substance, which sustains and strengthens the body, which cures all maladies, is a thousand times preferable to the poisons administered by the doctors to the human race." Again, "Bees spend their nights out of doors, except Thursday evening, when all return home, because of Friday, the holy day." That sounds a little superstitious; but when Mahomet had been dead a thousand years, and books were common in England, it was commonly believed there that bees built chapels and celebrated the Lord's supper in the hive; and even to-day many superstitions regarding them are alive in all countries.



CALIFORNIA ECHOES

BY J. H. MARTIN.

From recent issues of GLEANINGS I note that not a few bee-keepers, and notably Dr. Miller, page 425, have much trouble in finding the queen. A good share of this trouble is from lack of concentration of attention. The greater portion of bee-keepers, while hunting for the queen, scatter their thoughts. For instance, if an unusually nice yellow drone crosses the vision, the bee-keeper exclaims, "My! isn't he a beauty? wish I could get a queen mated to him." Then with drone in the eye, more drones are seen. Then a bee loaded with pollen will divert the eye, or a sunken cell cup. "Wonder if that is foul brood;" and with this thought in mind the queen might pass directly over the spot and not be noticed. A person looking for the queen should look for her and nothing else. Every thing but the queen must be a blank. A good aid to concentration upon this object is to keep repeating in the mind, "queen, queen," and mentally hold her picture steadily in the mind. With the other precautions of having good eyes, and not too much disturbance, the queen will be found with little trouble. But it is not at all mysterious that Dr. Miller can not find a queen, even where there are but few bees. He is distracted by being too full of straw. I have no doubt that, when hunting for a queen, he keeps repeating to himself, "Stray Straws, Stray Straws." The mystery in the case, Mr. Editor, is that he can even find a bee-hive.

On page 334, *American Bee Journal* for May 24, Mr. Reider expresses some doubts as to the correctness of Prof. Cook's description of the Belgian hare, alleging that they are not "bulky, fat, and lazy," as Prof. C. describes

them in a recent issue of that journal. Allow me to corroborate all Prof. Cook says about the Belgian hare. Our common jack rabbits are genuine racers, and would fit the description given by Mr. Reider. But the domesticated Belgian is a plump and doughty-looking animal. Perhaps our genial climate has something to do with this plumpness.

I notice there is some conflict between the hare and the bee-keeping industry. The bee-keeping end is likely to be neglected or abandoned altogether. I know this to be the case in some instances. There is hard work out in the sun during the hottest portion of the year, with bees, while with the Belgian hare the work is light and mostly under sheds. The work continues all the year, the interest becomes centered on the hares; and the bees are forgotten. The Belgian-hare business is just booming in this State, and Los Angeles is the head center; and Mr. Reider is right when he says there are hares here that can not be purchased for \$1000. Mr. Reider is a New York man, but he seems to be better posted on prices than on the shape of the hare.

About that Mr. Crowder and his 3000 colonies of bees, the statement of which was published in the *American Bee Journal* and quoted from a Tulare paper. I am informed by parties who live near Mr. Crowder that he has only about 800 colonies. The 3000 story was a sensational and gross exaggeration.

King-birds are plentiful here in Central California. Mr. J. C. McCubbin in his queen-rearing apiary near Reedley has secured 14 fertile queens out of 60 hatched. Whether it is the sole criminal or not, the bird gets a good share of the blame.

Advices from H. E. Wilder, of Riverside Co., and who is speculating in beeswax, and is calling upon all of the bee-men, reports that the loss of bees in that and adjoining counties is fully four-fifths. In the Orange districts the loss has not been heavy. Late rains will help out the honey-yield, and bees that have lived up to date will be kept alive. There may be some honey for shipment from favored locations. The prospect is fair for the usual honey-flow in Central California. The weather is a trifle warm now, 102 in the shade. Our hot weather comes in July and August.

Like Bro. Doolittle's old Dutchman, I should like to "arise and ask" what's the matter with E. E. Hasty. Let me quote what he says on page 343, *American Bee Journal*: "Your best girl, if rescued from the ruins of a house wrecked by a tornado." That's a whole romance in a nutshell. When a staid old bachelor like Hasty gets to raving about best girls and tornadoes, there's something worse than a tornado behind it. Yes, sir; it is a strong indication of matrimony. Didn't think that of you, Bro. Hasty (tears, onions in my handkerchief).

Right now I wish to record the fact that O. W. Stearns, a Selma bee-keeper owning about 500 colonies, works them all himself; but he has now left the bees to care for themselves while he is rusticating for three weeks

in the Yosemite Valley. That is all right and proper in this country. Alfalfa does not yield honey until the hot weather arrives. The chief danger in May and June is from starvation.



THE ADVANTAGE OF STIMULATIVE BROOD-REARING FOR THE HONEY-FLOW.

Bottom-board Feeder: Some Interesting Facts and Figures.

BY W. O. VICTOR.

The time will soon arrive when feeding bees for various reasons will be in order, and I have decided to remove the bushel and let the little ray of light that I may have shine forth and help all I can to lead the tempest-tossed seaman on the ocean of apiculture to a haven of success.

In this locality I have found it best to feed a little for two or three days about six or seven weeks before we expect our first honey-flow, which, with me, is about April 5 to 15, so you see from the 15th to the 25th of February will be the proper time. This will start brood-rearing in a rush; but when the feeding is stopped, the queen will most likely cease laying, to a considerable extent. By this we get about as much brood started as the bees will care for, and near the same age; and it hatches just at the right time to be of vast benefit to raise the bees that will bring in the honey in April. Should we have pleasant weather in March, we shall not be put to the necessity of stimulative feeding, as we have plenty of honey and pollen from the willow, ash, yeopon, and various other forest-trees that yield more or less honey and pollen.

Should the weather be cool and damp we may have to feed again to get brood-rearing to go on as rapidly as is best. Should there be plenty of honey in the hives, and we are not troubled by robbers, I know of no better way to hurry up brood-rearing than to work through the hives and shape things up nicely (however tempted you may be, do not spread the brood until you have the hive well filled with bees); this excites the bees, and causes them to cut into their honey and bring about the desired results. Should the weather continue unfavorable this should be repeated at least once a week; however, in large apiaries, and especially when one has several to look after, as in my case, we can not spare so much time to each hive, and the necessity of quick work has caused me to bring into use what has proven to me to be the best feeder I have ever used—the Dovetailed-hive bottom-board feeder which I use in the manner shown in the illustration. My hive stands on a level from side to side, with the front $\frac{1}{2}$ inch lower than the back end. To use the bottom-board as a feed-

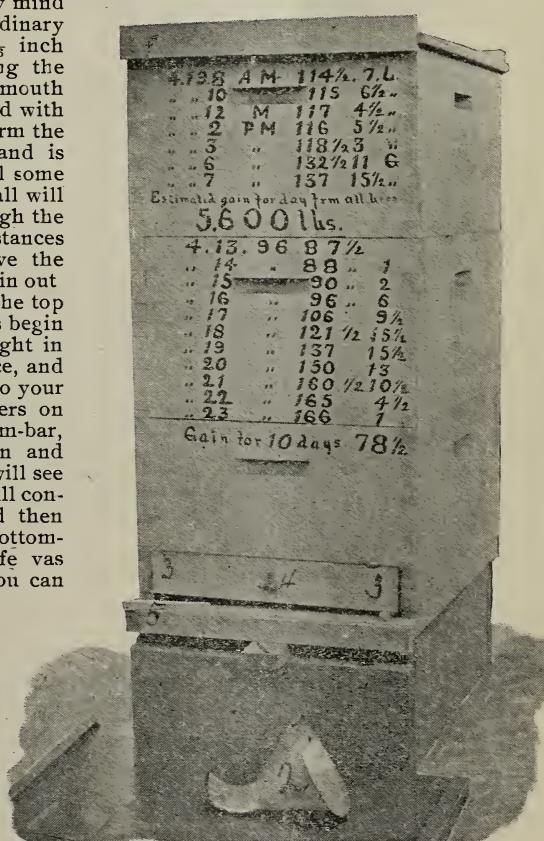
er, raise the front end and place a $\frac{3}{8}$ -inch block under it as at 1. This, you see, raises the front end of the bottom-board on a level with the top of the rim formed by the cleat at the back end and the strips along the side, which gives a basin $\frac{3}{8}$ inch in depth at the back of the hive, sloping to nothing at the front.

When I first began to use the bottom-board feeder (as we are wont to call it) I had great trouble in getting the honey to flow back in the hive, as the slope was so slight it would frequently overflow in front and cause more or less trouble. Necessity brought to my mind the device shown at 2, which is an ordinary funnel with a flat crooked nozzle $\frac{5}{16}$ inch thick by $1\frac{1}{2}$ inches wide. By placing the nozzle in the entrance of the hive, the mouth of the funnel stands upright. To feed with the funnel and bottom-board feeder, warm the honey or syrup so that it flows freely and is not chilling to the bees; hold the vessel some foot or more above the funnel, so the fall will be great enough to force the food through the funnel to the back of the hive (circumstances governing the amount used), then leave the funnel until the food has had time to drain out. Should the weather be cool, pound on the top of the hive with the hand until the bees begin to stir. In a few minutes bring your light in proper position, look in at the entrance, and you will see that which will bring to your mind a company of well-drilled soldiers on dress parade. On each side of the bottom-bar, in perfect line, with their heads down and tongues stretched at full length, you will see the happiest set of bees extant. This will continue until the food is taken up, and then comes the cleaning-up spell of the bottom-board, same as "Louis Scherfe's wife vas cleaned up" (page 48). In this way you can feed when the weather is too cool to feed in an outside feeder, and still you do not have to open the hive or give any extra room to hold the feeder, and have no extra expense for the feeders save the little blocks and the one funnel.

In 1896 I had my bees worked up to a high state of perfection, and among the last days of March we had cool damp weather which continued for some two or three weeks. On the morning of April 10 I discovered that some of my strongest colonies had consumed all of their stores, although the rattan was almost in full bloom. Owing to the cool damp weather they were almost in a starving condition. Fortunately this turned out to be a warm pleasant day, and they all got enough honey to eat and a few drops to spare, so I did not have to feed that night. The next day was cloudy with a little north wind and rain, which kept the bees in all day. I knew I should have to feed, so I told the boys to get every thing ready to feed that night; and as soon as it was dark enough for the bees not to fly out and get on a lark over the feeding we commenced. I had the honey in gallon cans. To warm it the cans were placed in a vessel of

hot water. One man attended to this part of the work, and the other two picked out the hives to be fed, and did the feeding. I would feel the weight of the hives, and if they were not more than 15 or 20 lbs. heavier than an empty hive I would feed them. I am sure I fed a good many hives that did not really need feeding, but that was better than to miss one that really needed it.

We rushed this work as rapidly as possible, going over three apiaries, and feeding about 300 colonies an average of one pound each,



A DAILY HIVE RECORD.

finishing our work at 2 A. M. Sunday, the 12th, we had a continuation of this cool disagreeable weather. Monday morning was dark and dreary, so I told the boys to rest up, as we should have to feed again that night. About 2 A. M. it began to rain in sheets, and continued to pour down until every vestige of cloud was gone. At noon I told the boys that, instead of feeding, we should have to give room to all the bees that were crowded, and accordingly each man went to a different apiary, and by night we had supers or extracting stories on all hives that were crowded with bees, although we had opened some 300 to 500

hives, some colonies not having a drop of honey in them. We had no trouble with robbers, as the sky was clear with a warm gentle south breeze and an abundance of blooms. Though the nectar was scarce and watery, the bees went for it in a rush.

Between sundown and dark I balanced my scale hive, which you will see by the first line on the middle story in photo, 4/13, 1896, 87½ lbs. The next line of the record was taken at the same time the next day, which shows 88½, 1 lb. gain, and so on. On the 18th and 19th, you see by the record we have 15½ lbs. gain each day. The best days you will see, by comparing dates, is the day preceding and following one week after the night I fed until 2 A. M. Thus I have shown you the most discouraging and the most prosperous periods of my 17 years' experience, within a space of eight days. By following the record to the 23d you will see that ten days covered the entire period of this honey-flow, beginning and ending with a gain of 1 lb. per day, having gained 78½ lbs. in the ten days.

On the top story I wish to show you a record made at different hours during the day. At the top line you will see Apr. 19, 8 A. M., 114½ 7 L., which shows the hive to be 7 1's lighter than it was at night on the 18th. Thus you see we had a good working force out at this time. At the third line you will see 12 M., 117, 4½ L. At the fourth line, 2 P. M., 116, 5½ L., although two hours later in the day the hive is 1 lb. lighter, which shows conclusively that at least some bees take noon, as some claim. By viewing this record carefully I feel assured that there could hardly have been less than 12 to 15 lbs. of bees in the field during the best hours of the day.

At the bottom of this record you will see my estimate for the day is 5600 lbs. This estimate was made by a close comparison of the condition of all my bees to this scale hive, and the actual gain shown by it, which, in my opinion, is a very close estimate.

Last, but not by any means least in importance, at 3:3 you will see my entrance-contractor, which is a board exactly the length of the entrance, 2 inches wide by $\frac{3}{8}$ thick. In the center of this board is a slot crosswise of the board, one inch long. At 4 is a thumbscrew which passes through a washer and through the slot in the contractor, and then through a hole in the front of the hive to a nut that has been let into the inner wall of the hive, so as not to be in the way of any manipulation of the interior. At 5 you will see a wedge that is used to adjust the contractor. Should you wish to close the bees in a hive for any purpose, place the point of the wedge under the contractor, one at each end; loosen your screw, press the contractor down on the wedges, tighten the screw, and the work is done. The wedge at the point is smaller than a bee, so you see this leaves a slight ventilation the full length of the entrance, which, with weak colonies and nuclei, is sufficient, provided the hive is not in the sun. By loosening the screw you can push the wedges in, raising the contractor and giving entrance of any size desired. Tighten the screw, and the

contractor stays as you leave it, which is one of its strong points. I have lost many nuclei by a loose stick falling off and letting in robbers. When you want a full-size entrance, raise the contractor up and tighten the screw; and when you want it again, it is right there waiting to be used, instead of being put away in the honey-house, thrown in the trash, or possibly used for kindling, as would be the case with a loose stick, as I and a great many others have used for years. This device is especially useful in rearing queens, as the many small colonies, necessary for the care of so many queens, are such easy prey for robbers. By placing one end of the device down on the bottom-board and adjusting it carefully, we have an entrance that only one bee can pass through at a time, and still have ventilation the entire length of the entrance.

Wharton, Texas, Feb. 1, 1900.

[No doubt there is a very great advantage in feeding at a time that will bring on a large force of young bees ready to catch the expected honey-flow. Mr. Doolittle has long urged the importance of this, and your figures show that much is to be gained from it.

You do not say whether the colony placed on the scales was an average one. I should judge that it must be, from the fact that you used this as the basis for your entire honey-crop; for if this average colony gathered on an average $7\frac{1}{2}$ pounds of honey per day for 10 days, your whole apiary must have been booming, and it speaks well for your method of feeding to stimulate brood-rearing at the right time.

Your figures regarding the weight of bees in the fields are also interesting; but these show conclusively that your colonies must be tremendously strong, and herein lies another secret of your success. That some bees take a rest at noon also appears from your figures. If I understand you correctly, the heaviest forces are out in the morning, and these forces diminish as the day progresses. I hope you will try the experiment further, in order to determine whether this is the invariable rule with other colonies.

Bottom-boards with feeders have very often been used, and are now being used very largely. We feed this way at times, and the plan is perfectly practicable, but of course the bottom-boards must be syrup-tight or else there will be a great waste and a consequent loss next morning. If there are any leaky bottom-boards the trouble may be remedied by coating them with hot paraffine or beeswax.—ED.]

EXTRACTING FOR WOMEN.

How a Practical Woman Bee-keeper Carries out her System.

BY MRS. A. J. BARBER.

Our extracting room is 12×18 feet in size, and faces the south. The two bee-escape windows are on each side of and above the little door where we put the honey in. The few bees that come in with the honey, when they

find themselves in the house, naturally go to the windows and escape, so do not trouble any one very much.

The extractor stands just opposite the little door, on the north side of the room. The uncapping-tub stands in the middle of the floor, so that two persons can work at it, one on each side. The one nearest the little door takes in the full combs, and shoves out the empty ones when I bring a load to the house; and between times she uncaps combs and hands them to the other assistant, who runs the extractor and uncaps between times. A third assistant takes the honey as it comes from the extractor and fills pails from the tank.

tracting before nine. The bees get cross about four, so we stop early. Usually the last combs are returned to the hives about four, and then comes the cleaning-up.

From 1200 to 1500 pounds is considered a good day's work for four of us. It does not sound very big, but after all it keeps us busy to get it from the hives into the pails and have it all done in good shape. I usually employ some of my neighbors, and pay them in honey. I pay a dollar a day and board. We extract about every ten days at the home apiary; and at the out-apiary, where we extract mostly from half depth frames used to start the bees in sections, we extract about three times in a season.

The preparation of honey for shipment and the care of wax will be the subject of another article.

Mancos, Colo.

[In our issue for April 1, page 253, we illustrated Mrs. Barber's method of conveying the extracting-combs from the hive to the extracting-house; and that article should be read in connection with this. I will explain to those who may not have that number handy, that she has a board, on the under side of which are mounted four casters, making, as it were, a sort of truck. This is placed on the wheelbarrow, which is then run close up to the hive. The supers are transferred from the hive to the truck on the wheelbarrow. The whole thing is then wheeled to the extracting-house, in front of which is a platform. This

little truck, with its load of supers, is shoved off from the wheelbarrow to the platform; a trapdoor is raised, and the truck (supers and all) is shoved into the house. Mrs. Barber has every thing down to a system, and it seems to me she answers affirmatively the old mooted question, "Can a woman keep bees?" —ED.]

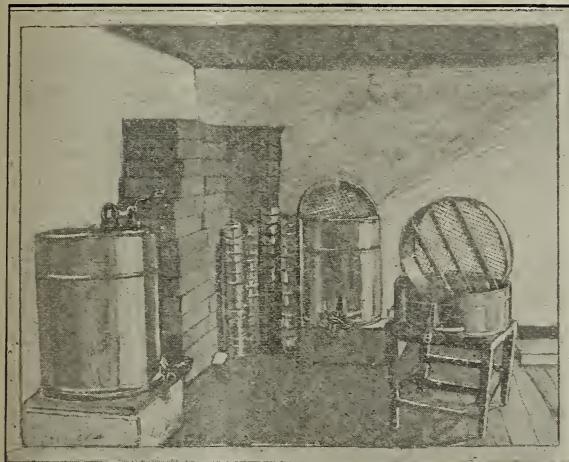
THE BELGIAN HARE, AGAIN.

Conservative Answers to Fair Questions.

BY F. GREINER.

Mr. Editor :—In response to your comments on my remarks regarding the Belgian-hare industry, p. 430, I would say that there seem to be some mistaken ideas afloat about the hare business which seem to me to need clearing away. If what I have said should start the hare fever in any one of the readers, it is but right that he should have the whole truth. I am sure I should not wish to mislead any one, nor will I stand idly by and see one misled by others if I can help it.

As I have intimated before, I have grown the hare principally for my own table, and it is a good subject for the purpose. I have kept



MRS. BARBER'S EXTRACTING IMPLEMENTS.

Our tank holds 30 gallons, and has for a cover a tray with a coarse wire-screen bottom. The tray is four inches deep. Into this is spread a wet cheese-cloth, and the honey is poured into the tray, and strains down into the tank. After the tank is nearly full, the one who attends the honey begins to fill pails. As there is a nice honey-gate to the tank, this is pleasant work. Our uncapping-tub is not so deep as the Dadant cans, but wider, and has supports for wooden bars which are used to rest the combs upon while uncapping. As we do not extract until honey is well capped we have lots of capping—sometimes more than our tub will hold, so we ought to have a bigger one.

Our tank stands at the east end of the room, and on one side is a pile of empty lard-pails; on the other side the full ones are piled as they are filled, to wait till there is time to label and crate them. Care is taken not to draw off too much honey from the tank and get the little impurities that rise to the top. We keep the tank not less than half full until we get through, then all little specks and foamy honey come off in the last two or three pailfuls, and all the rest is so pure and nice that it looks like lard when it granulates. As our nights are cool here we don't get to ex-

only three breeding-does generally. In the future I shall be obliged to keep more, for I can scarcely keep any for my own use on account of the demand from far and near.

The cost of growing the hare, as nearly as I am able to estimate it, is about 20 cents for each specimen, growing the animal to weigh about 8 pounds alive.

Right here comes in one of the mistaken ideas about the size of the critter. You state, Mr. Editor, that you have seen them in Colorado of the size of a good-sized dog. That is rather indefinite. I have known a dog to weigh 150 lbs. That, of course, was a large dog. A good-sized dog may weigh 75 lbs., or perhaps only 50 lbs. The Belgian hare does not come anywhere near that figure, I am sure. If the actual weight of the hares in Colorado had been given in pounds it would have been better understood and appreciated. The best that has been attained, to my actual observation and knowledge, is 14 pounds for a male Belgian hare. I know of some to-day, progeny of high-priced imported stock at that, weighing but little more than half of that. A year ago, at our county fair, I bought a male hare having taken the premium over one having received the first prize at the New York State Fair. He weighs now 10½ lbs. My breeding-does weigh about 8 pounds, but could be made to weigh more. Breeding them continuously reduces them in flesh, even with the best of care.

Where a great many breeders are kept, boxes are made use of for their habitations. They are about 16 inches high, 20 inches deep, and 3½ feet long. A good-sized dog confined for a long time would feel uncomfortable in such an apartment; but the hare, being smaller, feels quite comfortable in it.

Prof. Cook states that, according to good authority, a hare could be kept on 4½ lbs. of hay per month, which is not far out of the way for a six or seven pound hare. But with one the size of a good-sized dog I think it would be different.

By the way, fine hay and even timothy hay is not suitable for growing hares. They will waste a great deal of it, and will not do so well on it. Clover hay, if ever so coarse, is to be preferred.

Disease is practically unknown among hares; they are also not troubled with vermin. I have so far lost but one—a half-grown one—probably from feeding an excess of succulent food, or food wet with dew or rain. One must exercise care in this respect. With ordinary care, one need not have any losses whatever.

When stock is closely confined in these small boxes (or hutches) there comes in another feature that will need our attention. It is cleanliness. Prof. A. J. Cook said, in *American Bee Journal* a short time ago, "The Belgian hare is of very cleanly habits." In a measure that is true. But if Prof. Cook had bred the hares himself he would have found out that the hare may become very offensive. The solid excrements may be gotten along with without any trouble, but not so the liquid voidings. Dry earth, land plaster, charcoal, etc., will have to be used plentifully to keep

things sweet. The hutches will have to be sponged out often; their floors must be made absolutely tight, and a drain provided to carry off the moisture. When the hare is kept not too closely confined, and on a ground floor, with plenty of absorbents, no difficulty arises. The runs may not be cleaned out except each time after the young are weaned from their mothers, which will be every 6 or 8 weeks, when each apartment should be given a thorough going-over, and plenty of new bedding be given. In all our undertakings labor must be reduced to a minimum, and so I believe it is more profitable to lay out a little more money in buildings than to crowd many of the hares into a small space, and then lay out the money in the extra labor. Our aim must be to have the things around us as convenient and self-regulating as possible.

A clipping from the *Farmer's Voice* was brought to my notice recently in which a writer warns the people of the danger that hare-breeding may bring with it; viz., that the hares may become so numerous as to become a source of great annoyance. After watching these animals for years I can safely say that there is absolutely no ground for any fear of that kind. Without the protection of man, the race of hares would soon be extinct. Even should the grown animals escape all the dangers unharmed, they would not be able to bring up a single one of their young. Cats and dogs and crows would pick up the little fellows as soon as they made their appearance. We know this from sad experience. The hunters with their dogs and ferrets would, in a very short time, take care of the grown hares. Why, even the wild rabbit doesn't stand a very good chance in these parts, and will soon need protection for the sake of having any game left at all.

As to their doing any damage—well, of course they will bark young trees sometimes when food is scarce. I have a small park, about 50 feet square, into which I turn young stock. A few fruit-trees stand inside of it, and I have them protected with tarred paper. Last winter, when we had the deep snow, the hares were enabled to reach higher than the protection around the trees, the snow having become crusted, holding up the animals. I should have attended to the matter right away, but I didn't till my children came in one day and informed me of the mischief the little rascals were doing to the trees. During the summer, and when running at large, neither the hares nor the wild rabbits will very often do any injury to trees or to any thing else.

Should any of the readers' of *GLEANINGS* conclude to grow Belgian hares for market, I would advise supplying the home market first, although it may be necessary to educate the people before growing very many. I don't believe the Belgian-hare industry will prove a Klondike for the masses, but, like the poultry industry, it may be a help to them. I have an unlimited outlet for all the hares I can grow, at 15 cents per pound, dressed. This price is for matured animals. Broilers should bring 20 or 25 cents per pound on the same basis. The young animals dress away about

45 per cent; older specimens, about 35 per cent. A broiler would, therefore, bring about 40 cents; a matured one, 75 cents to \$1.00. These are the actual prices obtainable here, although our regular hotels will not pay more than 10 or 12 cents per pound. But they would not offer any more than that for fancy capons, and yet I obtained 18 cents for all I grew the past season, and that within 15 miles of my home.

I think I can now leave the reader to judge for himself whether it would be advisable for him to engage in the industry.

I hope the above may answer the many inquiries I have had of the readers of GLEANINGS since I wrote the article for June 1, and I would ask them to pardon me for not answering all the letters received in detail, which would be utterly impossible.

Naples, N. Y., June 14.

[I must acknowledge that my statement in reference to the size of Belgian hares I saw in Colorado, where I compared them to a good-sized dog, is a little indefinite. The specimens that I looked at were larger than any good big cat I had seen; but in referring to the dog I did not have in mind mastiffs, but the common house-dogs one sees every day around home.

Referring to the last paragraph, I hope our readers will bear in mind that it is not feasible or practicable for our regular correspondents to answer by letter all questions put to them. A better way, when sending questions, is to request answers through GLEANINGS. The correspondents will get pay for their time, and will also be able to answer hundreds of others in whose minds the same inquiries may arise.

I have always known Mr. Greiner to be a very careful and conservative bee-keeper, and I assume that he is, as a matter of course, equally conservative on the subject of growing Belgian hares. As I take it, he is interested in them only for market purposes, and therefore has no "ax to grind" for our readers.

I am now arranging to get some specimens, and hope to be able to have a practical knowledge of them myself in the course of time; because, if this business combines nicely with bee-keeping, we should certainly know something about it.—ED.]

FROM THE FRESHLY LAID EGG TO THE FULLY DEVELOPED QUEEN.

Age of Larvæ that Bees Ordinarily Select for Queen-rearing; Some Interesting Observations.

BY DR. C. C. MILLER.

On page 199, Vol. I. of the *American Bee Journal*, the Baron of Berlepsch gives details of an experiment he made, in which queen-cells were sealed nearly 10 days after the eggs were laid, and the queen emerged from the cell fully 18 days after the laying of the egg.

In another experiment the time was 17 days. "These experiments," he says, "show that the opinion generally entertained, that the queens emerge between the 17th and 18th day after the eggs are laid, is correct." This was forty years ago. Later, 16 days came to be accepted as the orthodox length of time for a queen, and still later some have called the time 15 days. T. W. Cowan says that queens mature "in from 14 to 17 days from the day the egg is laid." In a table of "Metamorphoses of Bees," British Bee-keepers' Guide-book, page 10, he gives what is probably meant to be the average, as follows:

1. Time of incubation of egg.....	3	days.
2. Time of feeding the larvæ.....	5	"
3. Spinning cocoon by larvæ.....	1	"
4. Period of rest.....	2	"
5. Transformation of larvæ into nymphs.....	1	"
6. Time in nymph state.....	3	"
<hr/>		
Total.....	15	"

It is probable that a principal reason for the formerly accepted longer time, and for the considerable variation allowed by so good an authority as Mr. Cowan, comes from the fact that nuclei instead of full colonies were used in some of the cases for observation. Berlepsch used "a small forced swarm" in the experiment which gave him 18 days. Possibly if observations were always made with full colonies under favorable conditions Mr. Cowan's 15 days might never be exceeded. It will be noted that Mr. Cowan has the larva fed 5 days and Berlepsch nearly 7, Cowan's queen being sealed when 8 days old, and Berlepsch's when nearly 10, counting from the laying of the egg.

Incidentally, I made some observations last summer as to dates of sealing and hatching, while experimenting as related on page 834 of GLEANINGS for last year. It may be remembered that the five combs, *a*, *b*, *c*, *d*, *e*, were given in succession to the same queen to be laid in, so that every egg in any comb was older than all the eggs of any comb coming later in the list. I rather expected to find that the cells, both worker and queen, would be sealed in the order of their ages, all the cells of *a* being sealed before any cells in *b*, and so on. Such was not the case, for July 7 I found 6 worker cells sealed in *b* while some cells were still unsealed in *a*. It might be supposed that the position might have something to do with it, the bees being more slow to seal cells in the outside comb, *a*. But this argument could not apply at the other side of the brood nest, for July 12 I found 4 worker-cells sealed in *e* while there were cells still unsealed in *d*. It seems clear that in this case cells were not sealed strictly in the order of ages.

July 6 I found about 10 square inches of sealed worker brood in *a* when the oldest larva was less than 8 days and 30 minutes old (I count always from the laying of the egg). This agrees with Cowan's table, "time of feeding the larvæ, 5 days." As some little

time should probably be allowed for the sealing of 10 square inches, it is likely that some of the cells were sealed when the inmates were less than 8 days old. Next day at 4 P. M. some cells were still unsealed when all had passed the age of 5 days 4 hours.

Comb *b* gave much the same testimony : 6 worker-cells were sealed when none had passed the age of 8 days 4 hours (they may have been considerably short of that), and a few cells were left unsealed when all had passed the age of 8 days 2 hours.

On comb *e* four worker-cells were sealed when the oldest lacked 45 minutes or more of being 8 days old. On this same comb, the last queen-cell started (with too old larvae) was not sealed till it was 9 days 3 hours old or older.

July 5 I started an experiment for the sole purpose of deciding something about the times and seasons of development. At noon I gave to No. 84 an empty comb for the queen to lay in, and took it away 4 hours later, with about 80 eggs in it, putting it over an excluder on 51. This upper story was strong in bees, and it was no doubt well cared for. July 8, 4 P. M., only 5 eggs were hatched. At this time all the eggs were at least 3 days old, showing that most of them did not hatch till after 3 days old. I think others have reported considerably less than this, showing that the bees are not uniform in their proceedings, but very likely Mr. Cowan is right in giving 3 days as the time for eggs to hatch.

At this time, July 8, 4 P. M., the comb was given to No. 18, its queen, all its brood, and some of its bees being taken away at this time, leaving it a fair colony, but not strong. July 10, 6 A. M., larvae were lavishly fed, several slightly enlarged as for queen-cells, and one hooded. One or several observations were made daily, but it is not necessary to recite all.

July 13, 6 A. M., one queen-cell sealed and one worker-cell. These were somewhere from 7 days 14 hours to 7 days 18 hours old. At 9 A. M., no change. At noon a few more worker-cells sealed. At 6.15 P. M., another queen-cell sealed. This cell must have been sealed when not more than 4 hours under 8 days old, and not more than 6 hours 15 minutes over 8 days old. These were perhaps the only queen-cells started with larvae of proper age, for the age limit was reached July 11, 4 P. M. But the bees continued to start queen-cells, and seemed especially desperate in the matter when the age limit had been passed some two days, for 16 fresh queen-cells were started between July 13, 6.15 P. M., and 4.30 the next morning. It should be remarked, however, that 4 other cells had been started soon after the age limit was passed.

It would seem as if the attempt to make queens of too old larvae had the effect to prolong the time of sealing beyond what it would have been if the larvae had been treated throughout as workers. Notice what follows, and you will see that this is so. When the 8 days from the laying of the last egg had been passed 12 hours 30 minutes, there were 16 queen-cells unsealed. At 17 hours past the 8

days, 9 were still unsealed. At 21 hours past the 8 days, 3 were still unsealed. At 25 hours past the 8 days, 2 were still unsealed. I am sorry to say there is no note when these last two were sealed.

July 20, 6 A. M., no queen had yet emerged. At 10.25 A. M., one was out of the cell and was removed. This queen emerged from the cell in not less than 14 days and 14 hours, and not more than 14 days 22 hours 25 minutes, after the laying of the egg.

There seems nothing in these observations to throw discredit on the table of Mr. Cowan, and it may not be an unfair inference that he drew his conclusions from colonies of fair strength while others used nuclei.

A practical consideration is that those who count upon 16 days from the laying of the egg to the emerging of the queen may have a fine batch of queen-cells destroyed by a queen emerging inside of 15 days.

It appears quite plain that bees are not uniform in their performances, and it would be nothing strange that the next experiment should give different results.

I am quite strongly of the opinion that there is much more variation as to the time of sealing queen-cells than there is in the time of sealing worker-cells. I have been surprised sometimes, upon opening a sealed queen-cell, to find it occupied by so small a larva, and this with every thing in prosperous condition. The bees can afford to vary no little with queen cells, while such variation with workers would be disastrous. As a rule the rations of the workers are carefully measured out, not an iota remaining unused ; and if the larva should be sealed up a day or two before the usual time, the worker would be dwarfed if not starved. With a royal larva it is different. From first to last it has an excess of food, and if sealed up while quite small it has a sufficient supply to last.

Marengo, Ill., Jan. 12.

[This article, as will be seen by the date, was written about the first of the year ; but I have held it till now so that the interesting conclusions can be verified or disproved in the apiary. I should like to have our readers, especially queen-breeders, go into the matter carefully ; for in a practical way it involves the matter of choice queens, and that means honey.

What surprised me is that in one of the experiments conducted the bees should have apparently waited so long before starting the bulk of the cells ; for Dr. Miller says that 16 fresh queen-cells were started on the 13th of July, just 8 days after the eggs were laid, or 5 days after the larvae were hatched. We have heretofore assumed that larvae just hatched, or larvae not more than 3 days old, was the preferred age ; but here is a case where the bees evidently had a preference for the five-day limit. Now, the question is, was this exceptional with this colony, or is it the common average ? Now, friends, don't you see a great deal of importance attaches to this?—ED.]

ANOTHER "GOOD CATCH."

An Enthusiastic Bee-keeper 90 Years Old.

BY J. A. GOLDEN.

Mr. Root :—I have the pleasure of presenting to you a good catch by one of our pioneer bee-keepers, Mr. Adam Smith, of this place.

sold his farm, and purchased property in this place, moving here some 16 years ago, and engaging with his son William in the mercantile business.

Although now in his 90th year he is frequently found trimming hedge fences and cutting briars on his little farm adjoining the village. Mr. Smith has been a bee-keeper the greater part of his life, and still keeps bees;



A GOOD CATCH BY A BEE-KEEPER OF OVER 90 SUMMERS.

He is a native of Pennsylvania, and was born Feb. 22, 1811, and in 1836 emigrated to Morgan Co., Ohio. By his industry he accumulated sufficient means to purchase a good farm, having lived there until his children were all married, consisting of five boys and six girls, all living but two girls, at this writing. He

and, although very nervous, it would delight any bee-keeper to see him manipulating his "pets" as he calls them. Really his bees seem to enjoy his management. He produces comb honey exclusively, having adopted the Golden method. After testing it for three years he says he is highly pleased, and will

use no other method during the remainder of his life, which is gradually drawing to a close.

HOW THE GOOD CATCH WAS PROCURED.

The writer was passing down the street, looking toward Mr. Smith's house-apriary, when he discovered the old gentleman standing by a very large swarm, intently studying the action of the bees when clustered. I just thought, "That's good enough," and quickly secured my kodak, and tiptoed to a position where I expected to catch Dr. L. P. Culver in the background. I touched the button, but in haste, for fear the old pioneer would break that intense expression of thought depicted upon his features; but on developing the catch I found I had missed the view of the doctor. However, we are content with our catch, and defy all beedom to produce any thing more natural.

Reinersville, O.

[This is one of the "good catch" series; but as it was received some time after the others, it was held to be used at a time when it might be more in keeping with the season.

We are glad to introduce the old gentleman to our readers, because he has not only been a successful bee-keeper but has passed the allotted time of threescore and ten by nearly twenty years. May he still live to complete a good round century.—ED.]



A BEGINNER'S WILD DREAM ; WHISKY AND BEE-STINGS.

It was the last of April, I believe, and I was out among my bees looking around one morning. I almost always find something to look after. A few dead bees in front of some hive will give the clew that all is not right within; or some hive has tilted out of the perpendicular after the frost comes out of the ground. And then it is fun to see the bees lugging in pollen of various colors. Deacon Strong came in when my back was turned, and spoke before I knew he was there.

"What have you here? Roofing your hives with glass, I see," said he. "Warms them up pretty well this time of year, but I guess that glass would make them pretty hot in July. I thought bee-keepers tried to shade their bees from the sun."

"Well, now," I replied, "I don't know that it is quite orthodox, but I am fond of early vegetables, and, like the son of the Enderald Isle, I find 'it is niver aisey to work hard;' and I find it a good deal of work to make a hot-bed every spring with manure and earth frozen hard, so I have just made me some boxes with old sheet-iron bottoms, and fill them with earth in the fall; and then in the spring when it is time I just take off the cushion from the top of the brood-chamber of

some of my strongest hives and replace with these boxes of earth, and pack round the edges, and cover with glass. You can use, as you see, a box some twelve to fourteen inches wide by twenty long. A good colony of bees will give just about the right amount of bottom heat, and the earth is about as good as a cushion to keep the bees warm, and there is no danger of too much bottom heat, as there is with a hot-bed. You can fix as many hives as necessary to supply your family with all the early plants you want, and it is but little more work to care for half a dozen such miniature hot-beds than one. And, besides, you can use old tin fruit-cans for tomato and other plants. Just put them in the fire and melt the solder and then tie them together with a string and they will hold just the right amount of earth for plants to grow in, and then you can transplant without disturbing the roots, and save time and money both."

"Quite an idea," said the deacon. "I believe I will try it next year. But I came over to inquire how you manage to keep your wagon-tires so tight. Some one was saying you hardly ever had to have them set. A queer question to ask, but I thought I should just like to know."

"The simplest thing in the world," I replied. "Just keep them painted."

"But I can't afford to paint my wagons all over every year," said he.

"Nor I either; so I just paint the felloes where paint wears off first, every spring, and, as often as necessary, the whole wheel and body. I have found paint with a little varnish a good deal cheaper than blacksmith bills."

I had hardly finished speaking when a stranger approached and inquired:

"Is this Mr. Brewster?"

"I am sometimes known by that name," I replied.

"Elisha Brewster?" he queried further.

"Yes, Elisha; though my neighbors more often call me 'Lisha' or 'Uncle Lisha.' Uncle seems to compensate somewhat for gray hairs and rheumatism."

"Well," said he, "that is a funny name."

"It may be funny, but it is at least scriptural," I replied, rather sternly.

"Yes," he went on, "our fathers were great hands for scriptural names. The Bible was a sort of handbook on all matters of morals, religion, and the naming of children; and I have heard of a woman who named her dog 'Moreover,' because it was the scripture name of a scripture dog."

"How so?" said Deacon Strong, coming to my relief.

"Oh!" he replied, "didn't Moreover, the dog, lick the sores of Lazarus?"

"It may be, moreover, that the dogs did," said the deacon.

"My name is Peter Henshaw," said the stranger, "and I have come over from Spruceville to talk-bees with you."

"You may as well proceed to talk at once, then," said I, rather crisply, and he proceeded:

"I have a little place over there, and have room enough, and I want to know if I can

buy fifty hives of bees and increase them to two hundred in one season, and then depend on their giving me fifty pounds of surplus per hive. I have read several books on bees, and I thought if I could get, say, 10,000 pounds of surplus per year, I could make it pay."

"I have no doubt of it," I replied; "but the question is, whether you can get it."

"Oh! I don't intend to rely wholly on the bees, for I am going to keep pigeons, fancy pigeons, and other fancy poultry too."

"Ever kept any bees?"

"Well, no; but I have read all the books I could find, and know all about it."

"Ever read what they say about keeping pigeons and bees?"

He didn't remember.

"What are the honey resources over in your section of the State?" He didn't know.

honey of very good quality, however, but they are valuable for building up in spring."

"How about supplies? Doesn't it cost a small fortune to buy all the hives and sections and foundation you need?" inquired Mr. Henshaw.

"That depends," said I. "There is Mr. C_____, of West Brimfield, who lives less than a hundred miles from you, and he manages a large apiary without paying out much. He cuts the timber for hives in the forest, and draws the logs to mill, and, when dry, cuts up the boards with a small foot-power circular saw, and makes the hives himself. He does the same for clamps and sections. He lets the bees fill their frames with combs while working on striped maple or goldenrod, so he has no heavy foundation to buy. I don't know whether he makes the nails he uses or not,



"A DEFINITION OF STIMULANT."

"Before you go in quite so extensively, don't you think it would be a good idea to look up some of these points?"

He didn't know but it would.

"I can tell you one thing," said Deacon Strong; "they have one source of honey over there of great value, and that is the striped or spotted maple. It comes early, and yields abundantly. It is not a tree like the soft or sugar maple, but rather a shrub from five to fifteen feet high, and blossoms abundantly and produces great quantities of honey. It is very conspicuous all along the roadsides, and adds much to the landscape with its masses of showy seeds in late summer and early autumn. The dogwood also yields honey abundantly, but is not very plentiful. Neither shrub gives

but I should not be surprised to learn that he did, as I found he made almost every thing when I was visiting him."

"Some work, I guess, about keeping bees?" Mr. Henshaw observed.

"After you have tried it for a few years you will not need to guess in regard to it."

"Hello! Is that you, Deacon Strong?" shouted Jerry Benton, from the roadside. "I want to see you. Will the bees sting me if I go over where you are?"

"That will depend," said Deacon Strong. But he thought he would run his chances, and come into the yard.

"Oh! see those bees! Is that honey on their legs?" he inquired as soon as he saw the bees carrying in pollen.

"No. Don't you see it doesn't look like honey?"

"Oh, no! I see it is wax."

"No, it is not wax; it is pollen," said I.

"What do the bees do with pollen?" he inquired.

"Why, feed their young brood, of course."

"I tell you there is a good deal to learn about bees," said Jerry. "But I dropped in to see if you had not sort o' made up your mind to support our license candidate for the legislature."

"No," said the deacon, "not if my name is Zebadiah Strong."

"But," said Jerry, "haven't you heard of Prof. Atwater's experiments?"

"What experiments?" queried the deacon.

"Oh! he has proved that alcohol, when taken into the body, will burn, or give out heat, the same as other food. He put a man in a little glass house and weighed the air and food, and did every thing in the most scientific manner, and he has proved it's so, whatever temperance fanatics may say."

"We can burn alcohol outside of the body, and I presume," said the deacon, "under some circumstances it may burn in a human body; but it is an old saying, and a true one, that you can not get something out of nothing. Now, we all know there are no nitrates in alcohol to repair the muscles or phosphates to build up the brain or bones, so that it can not be a true food."

"But doesn't a man feel stronger after he has taken a little whisky?" queried Jerry.

"I presume so," said Deacon Strong, "just as my horse feels stronger after I have given him a little whip. But you ought to see my horse Prince go after he gets one cut. I am not sure but there is a good deal of nutrition in a whip. And after all, there is not so much difference between a whip and whisky as there might seem at first thought. You will notice that the first—yes, the first three letters of both words, are the same. One makes the skin smart on the outside, and the other makes it smart in the inside. Both make the nerve centers give out energy that has been stored up for sickness or old age. No, sir; alcohol is not a food but a stimulant, pure and simple, or a poison."

"What is a stimulant?" Jerry asked, with about as much interest as eighteen hundred years ago, Pilate asked, "What is truth?"

"It is most likely to be a poison," said Deacon Strong, "that acts on the nerve centers, and increases the circulation of blood and—"

But just then a bee from a hive that Jerry had carelessly sat down on stung him over one eye, and he jumped to his feet, and, swinging his arms, knocked his hat off, when another bee took him in his back, and another on one leg, and another on his nose, when, using language that was any thing but gentlemanly, he broke, and, hatless and wildly gesticulating, he ran down the street a living flesh-and-blood illustration of a stimulus.

"We would call that fellow, over our way, a regular cork-screw politician," said Mr. Henshaw.

"What is that?" I inquired.

"Why, the crookeder it is, the stronger the pull—see?"

"Lawful sakes alive! What ails that 'ere man down the street there?" exclaimed Will Simpson, from the roadside.

"He has been taking some stimulants," said Deacon Strong.

"How did he take them?" queried Will.

"With a hypodermic syringe, I should say," the deacon replied, while a comical expression came over his face, rather unusual for him.

"Great Gemima! How he runs! Got any more of that kind of stimulants over there?"

"Plenty," said the deacon.

"I guess I won't stop—got to be down to Gains' Mills by ten o'clock," and Simpson trudged on with his bull terrier at his heels.



MAKING LATE SWARMS PROFITABLE, ETC.

"Good afternoon, Mr. Doolittle. I thought I would drop over a little while to-day and have a talk with you about swarming. It is getting a little late for swarms now, but I have several colonies that I fear will swarm yet, and I wish to know if there is any other way of treating them than that usually adopted."

"Glad you called, Mr. Smith; and about treating swarms, it is the custom of many bee-keepers to hive new swarms on a new stand at all times of the year; and while this is often profitable in the early part of the season it is often ruinous, so far as a crop of surplus honey is concerned, where practiced the latter part of the honey harvest. As the season advances, a different plan is needed from that used during June, and after considerable study along this line I hit upon a plan which has worked to my complete satisfaction."

"Good! And now if you will give me the plan I shall be under much obligation to you."

"Never mind about the obligation to me. Whenever you have a good chance to benefit a fellow-mortals, always improve that chance, never thinking that you are under no obligations to any save those who have helped you. It is even well to try to benefit the unkind and unthankful, for the Father above sends the rain, sunlight, and dew on those who never think of thanking him, much less of being under obligations to him."

"Is that your plan of treating late swarms?"

"Well, not exactly; but I thought it no harm to give you a little truth as occasion presented. The plan is this: As soon as a swarm is seen issuing I take six frames filled with foundation, and two wide frames of sections, putting the same in a box or hive which is convenient to carry; and when I arrive at the hive from which the swarm is coming I take the frames from the box and place them down by the hive. As soon as the swarm has mostly ceased coming out the hive is opened, and all of the frames of brood and honey, with

the adhering bees, taken out and placed in the box, after which the two wide frames of sections are placed, one at each side of the hive, and the six brood-frames put between them. The hive is now rearranged and closed."

"Will the bees stay on these combs all right in that open box? I should think they would fly out after the swarm."

"There is no trouble about the bees leaving the combs. If the weather is warm, and there are many bees on the frames, about a third of them are shaken off in front of the hive, when the box is placed in the shade a rod or two away, so the bees from the swarm will not find it when being hived, which is the next thing to do; hiving them in the rearranged hive on the old stand."

"Is there no danger of having too few bees on these combs should the weather be cold?"

"If the weather is cool, or but few bees are on the combs of brood, omit the shaking off, for it will want all of the bees to keep the brood in good condition."

"Yes, but what do you do with these combs of bees and brood?"

"That was what I was going to tell you next. They are taken to a hive which has been placed where I wish a colony to stand, and arranged in it the same as they were in the old hive; and after tucking them up all warm and nice they are left till the next morning. At any time during the forenoon of the next day they are given a virgin queen, or a queen-cell just ready to hatch, and in this way we have no trouble with after-swarming, for the bees feel so poor at this time that they are glad of any thing in the shape of a queen, the flying bees that were taken with the combs of brood having gone back to the old stand with the swarm."

"Must this giving of the queen be done at just such a time? Why not wait three or four days?"

"If the delay is longer than eighteen hours, this formed colony often becomes so strengthened by the rapidly hatching brood that they will destroy the queen-cell, or kill the virgin queen, and after-swarming will be the result."

"Would it not be well to give this formed colony a laying queen?"

"Do not give them a laying queen unless you wish a prime swarm from the colony in from eighteen days to three weeks, for the bees will surely use her for such swarming if the honey harvest continues for that length of time."

"What do you claim for this plan over the old one used by the many?"

"By this plan I get a powerful colony on the old stand, which will do as much as, if not more, in the sections, than they would if they had not swarmed; for a new swarm will work with a vigor rarely known to bees under any other circumstances."

"Do you do any thing further with the colony made from the combs of brood?"

"In ten days, if the honey harvest continues, sections are given to this colony, which has rapidly increased to such from the combs of brood carried in the box; and as the young

queen has now commenced to lay, the bees will at once go into the sections, often giving a fair yield of honey; yet the main yield will come from the new swarm, as they have at least one-third more bees than they would had they been hived on a new stand, all of the field-bees returning to this place."

"Do the bees returning from the combs of brood and the fields catch the inspiration of the swarm?"

"Yes, they all work with a will together; and as the harvest is at its height also, and the brood-chamber contracted, the storing of honey goes on in the sections at a rapid pace, such colonies often giving from 50 to 100 pounds of 'fancy' honey to their keeper, while, if hived on the old plan, little save partly filled or empty sections would be the result."

"But will this new contracted swarm have stores enough for winter?"

"If the hive is left as we now have it till winter the bees are not liable to have sufficient stores; so when the harvest of white honey begins to draw to a close, the sections are taken from the sides, which were placed there at the time of hiving (if they have not been taken out filled before), and the combs necessary to fill out the hive are used to take their places. In this way the bees will fill these last for winter; and should a fall yield occur they will often have some extra stores to spare to help out any weak colony that may be short."

"What is done with the partly filled sections which may thus come from the sides?"

"These are taken from the wide frames and placed with those which are on top, when the bees will finish them, if the honey season does not drop off too suddenly; or they can be kept and used for 'bait' sections the following year."

"How are these best kept over so that they can be nice and clean, ready for use when wanted?"

"There are various ways, such as extracting the honey from them and then placing a lot over some strong colony for the bees to lick the remaining honey off, when they are stored away in a clean dry place till wanted. Or they can be uncapped and set over some colony short of stores till the honey is carried below. But I generally use the plan given by Dr. Miller, I think, of setting the whole lot in the cellar or some dark room, when on a pleasant day the door is opened, giving the bees of the apiary access to them, when, at night, I find them all cleaned up, with very few combs gnawed, provided we give the bees access to them at the right time, so that night comes at about the time the bees have the honey carried away. But I shall have to say 'good day' now, as I have to go to the out apiary yet before night."

G. F. D., Texas.—Occasionally we find drones from a particular queen-mother having variously colored heads. They are quite a novelty, and yet we have reports of them every season.



FLORIDA FLESH-EATING ANTS.

In reading on pages 432 and 433, June 1st issue, about ants, it occurs to me that probably you are not acquainted with our Florida ants. We have several kinds that are flesh-eating, and care but very little if any thing for sweets. The ants that destroy bees here are very large, and appear to prepare for battle as much as an army of men. They come in from the woods like an army, and make a stand in an old stump; or if they can not find a better place they take the A. I. Root closed gable cover for a stand. When they pitch battle they fight by killing and being killed until one or the other is extinct. A strong swarm of bees will kill a pint of ants, and probably lose two to three quarts of bees; but two quarts of these ants will conquer a large colony of bees in one night. I have had them drive every bee out of the hive, and find them clustered on the ground in the morning, and then again I have had them cut the wings of every bee in the hive so they could not fly. These ants will cross chalk, coal tar, or any thing I have tried except boiling hot water.

Vero, Fla., June 8. H. T. GIFFORD.

[Bisulphide of carbon would kill these ants, no matter if there were thousands of them in a nest. Put about two ounces of the drug in their stronghold, and if it does not make them "lay down" and stay "down" I shall be surprised. Try it.—ED.]

THREE SWARMING SEASONS IN THE YEAR.

There are three swarming seasons here—spring, summer, and fall—mostly in the spring. Spring swarms sometimes come off in March, but generally in April; summer swarms irregularly during June, July, and August; fall swarms, but not many, sometimes in November. In my experience, spring and fall (or early and late) swarms invariably cluster on the premises, if there is anything suitable for them to alight on; but summer swarms frequently leave without clustering.

Opelousas, La. J. W. JACKSON.

[You must have a good honey location to have not less than three swarming seasons. Most good localities afford only one swarming season in the year.—ED.]

WINTERING UNDER DOVETAILED-HIVE COVERS WITHOUT BEE-PASSAGEWAYS.

Editor Root:—Since I began using your Dovetailed hive I have found some fault with the cover, on the ground that it did not furnish adequate protection in cool weather. I always supposed that it was best to have an open bee-space over the frames; but the cover did not admit of using a quilt and still preserve one. But I think I have discovered that the open bee-space is not necessary. This

spring, when I placed the bees on the summer stands, I protected all of them on top in one way or another. In a good many cases I cut pieces of carpet just to fit inside the hive over the frames; then, with the flat cover on, this arrangement entirely did away with the bee-space. I will remark, also, that my combs are all built from full sheets of foundation, and have no holes in them through which bees can pass. It might, therefore, seem advisable to have passageways over the frames. But the result shows that all those colonies on which the carpets were placed have built up very rapidly, and are among the strongest of my stock. This may be of interest to others who are using the same hive, or, perhaps, they all knew it before.

Bees wintered well in this locality. White clover looks well, so that we are expecting a profitable season.

HARRY LATHROP.

Brownstown, Wis., May 28.

[It has generally been set down in the textbooks, and recognized by prominent bee-keepers, that to winter bees successfully one prime essential is a passageway, either through the combs or over the tops of them. It strikes me that your experience is a little bit exceptional. I wish you would try it another year, and see if the results are the same.—ED.]

A HONEY-EATING BEETLE; ITS GENERAL HABITS, ETC.

Dear Mr. Root:—I was very glad to get the communication from Mr. Mediseth, Ware, Ark. It contained something new, and I am always on the scent for new things in nature's glad realm. Mr. M. writes as follows: "I send you some bugs [they are beetles] which were very bad on my bees last year. The bees can do but little with them. I think that the only way they can kill them is to ball and smother them to death. They often do this. This insect eats both comb and honey."

This beetle proves to be *Euphoria sepulchralis*. It is a common species in the East. I have never heard of this habit before. I know, however, a very close relative that is very common in Michigan, and which has a habit that makes it easy to see why this little sober garbed beetle has taken to this new role, which shows clearly that he has a sugar-tooth, and that he appreciates one of the best sweets that God has given to the world. I refer to a large noisy beetle that often is mistaken for a bumble-bee as he sweeps by. This is *Euphoria indica*. It has the robust form of the family to which it belongs, the May or June beetle family. It is shorter than the common brown May-beetle, and so looks even more full-fed. It is yellowish brown, and is an attractive-looking beetle. The habit to which I refer is that of entering the richest peaches and pears, gouging out a place to enter, and fairly smacking its jaws as it feeds on the luscious pulp. This beetle often does no little damage, as it bores into the best and ripest fruit of the trees. I have known it to depredate on peaches, pears, and apples. One year I knew it to tunnel out countless funnel-shaped holes in

some of the richest, most luscious fall pippins that mortal ever ate. This surely gives good evidence of its good taste.

It need hardly be said that a luscious Crawford, Bartlett, or pippin is almost as good as honey; and if the other *Euphoria* will feast on the best fruit, why not this one on the best honey, which, I take it, is the kind that Mr. M. produces?

We are not surprised, either, that the beetles are safe against the bees except when they are balled to suffocation. As all know, the beetles, like all insects, wear their skeletons on the outside; and this armor, for such it is, is very thick and tough, so that it is well nigh impenetrable. We are not surprised that the beetles are indifferent to stings. They are safely guarded, in their chitinous covers, from hurt, even against such javelins as the bees possess.

It is to be hoped that this habit will not become common enough to work any considerable harm. I hardly see how we could fence against this little intruder. I think he could go where a bee could, and so we could not bar him out except we shut out the bees as well. The beetles, unlike the most of their family, fly in the hot sunshine, and so we can take advantage of the night hour to keep them out. The beetles are half an inch long, a dark olive in color, and are speckled above with dots or splashes of white.

These beetles were put in the letter, and so were smashed as flat as a pancake. Insects ought always to be sent in a strong box, and with a little cotton or soft paper, so that they can not rattle to their hurt. They can be sent for a cent postage, and then they come safely.

Claremont, Cal.

A. J. COOK.

VIRGIN-QUEEN LOSS.

We notice that a large per cent of your virgin queens are or have been turning up missing. You think the probable cause is the king-bird. Undoubtedly it caught some of the queens, as they are very active during the early spring or breeding season. But say, friend R., I would be willing to wager you a cookey that, if the truth were known, the bees themselves killed nine queens for every one which was caught by the birds. Remember, I am not pleading for the birds—in fact, I shoot all I get a chance to. We think there are more bees killed by the bees themselves than are lost by the queens flying out and not returning. Next spring you examine the nuclei on a nice warm day along in the afternoon, about the time when the queens ought to be flying, and see what per cent of the virgin queens you will find balled. H. G. QUIRIN.

Parkertown, O., June 11.

[I will explain that friend Quirin is an extensive queen-breeder, having in operation something like 500 nuclei; and it should be assumed, of course, that he knows what he is talking about.]

Yes, friend Q., while we always expect a large loss of young queens in the spring of the year, yet last spring we were having a larger loss, and the fact that king-birds and other

birds were quite in evidence at that time, led us to believe that they were responsible for the increase in loss. I do not know why the bees should ball their own queen, and the only one they have; but when honey is not coming in, and it is a little chilly outside, bees, like human beings, feel like blaming somebody. Perhaps they think their young mother ought to lay.—ED.]

END-SPACING STAPLES IN THE ENDS OF THE TOP-BARS.

Tell Mrs. A. J. Barber, and all others who have trouble with your short top-bars in ill-made hives to drive the end-space staple in the top-bar on the lower edge instead of the end-bar. Years ago I ran an apiary of home-made hives on shares for a neighbor, and had a great deal of trouble with the frames dropping off the rabbet, but remedied it by driving nails in the top-bars. S. R. AHRENS.

Fayetteville, Ark.

[Your suggestion is a very good one, and will remedy the trouble with poorly made hives. But why should one purchase cheap hives when the very best cost but a trifle more? Cheap things are often very dear at any price.—ED.]

Please inform me why my young swarms, as they leave the parent hive, go direct to the woods. They do not alight and cluster.

Descanso, Cal. E. P. ST. JOHN.

[It is the rule, that all swarms alight shortly after leaving the hive; yet there are many exceptions. Swarms will sometimes go directly from the hive in a bee-line for the woods. No reason can be assigned for it other than that the scouts have been out before, and, having learned the exact location of a hollow in a tree, they lead the bees directly to their new home. You speak as though all your swarms abscond in this way. I should hardly think that possible, although it would not be improbable that three or four might go off so.—ED.]

HOW TO CARRY SWARMS ON A BICYCLE.

That is a very pretty and useful method, no doubt, Mr. Editor, as detailed by you, but it isn't in it with the exploits of the bees of "Auld lang syne." I don't know just how "lang," but away back in the days of Tam O'Shanter bees were in the habit of carrying great loads of honey on bicycles. Don't believe it? Just listen to what the poet Burns has to say on the subject:

As bees bizz out wis angry fyke,
When plundering hordes assail their byke.

Bradford, N. Y. A. J. WRIGHT.

LOTS OF SECTION HONEY.

Bees have had a great time the past ten days—lots of section honey. But bees hereabout had a hard time from March to May 15. It was the worst spring I ever knew for bees. The cold winds caused the colonies to dwindle badly. All my colonies are in fine condition now, and solid full of honey and bees. I

have all the orders for queens I can attend to, and queen-rearing is progressing finely.

Wenham, Mass., June 7. HENRY ALLEY.

WHAT MAKES THE BEES SWARM AGAIN?

Please tell me what is the matter with my bees. I had a swarm the 6th of June, and after much trouble I succeeded in hiving it. I placed a frame of honey and brood in the hive. They went to work at once building comb, and had stored a little honey, when on the eighth day they swarmed again and left a cluster of bees on the front of the hive. All the time, though, the most of them were working. Please tell me through GLEANINGS what is wrong with them.

J. I. CLARK.

Vann, N. C., June 17.

[Without seeing the hive and the general surrounding conditions I should not be able to give a reason why the bees swarmed out; and, to be frank, I do not know that I could, even if I saw the hive out of which the bees swarmed. Bees will very often do strange things. To answer your question in a general way, a newly hived swarm is likely to leave the hive, without any apparent reason; but this liability is greatly increased if the hive stands out in the hot sun, and if the entrance is too small. A newly hived swarm should always have a wide deep entrance, and it has been our practice to raise the hive up on four blocks; or when that is not practicable, raise the cover. After they have quieted down, the cover may be set back on its place.

A great restrainer for swarming is a frame of unsealed larvae. A comb of *capped* brood is not nearly as good as one having young larvae, which the bees know, as a matter of course, they must take care of; for it gives them something to do at once.

Bees seem to regard swarming as an occasion for a gala time; and I have thought sometimes that, after they have been hived nicely, they come to the conclusion that they might have done better if they had gone further; and if they so reason, why, of course they will strike out for new quarters again.—ED.]

BLEACHING COMB HONEY; FURTHER PARTICULARS REGARDING WHITE'S METHOD.

In your explanation of my article on bleaching comb honey you say your readers would like to know if I can whiten all kinds of stained combs. I have not had any comb honey so badly discolored as that described by Dr. Miller, in which dirt and slivers of wood were in the cappings. We have some badly stained combs in the last supers taken from the bees. The worst ones, however, were much improved by the bleaching process, and nearly all were rendered equal in appearance to those of the same grade that were not travel-stained. The proportion of soiled sections is, I think, much less here than with you, judging from what you say. The last good honey season, 1897, the proportion of discolored sections was not more than ten per cent in my honey crop. As you doubtless know, 1898 and '99 were failures, here, and the present season the crop

will be very light, so far as surplus is concerned, in this immediate vicinity. In some localities in this country they claim to have a good prospect—in fact, have already extracted some honey. I learn that in places not 20 miles from us they had 4 inches more rain than we did here. We had only 8 inches from Jan. 1 until April 15. We had only $\frac{1}{4}$ inch of rain.

During this time the grain made but little growth—in fact, we had lost hope of having any grain or hay; however, late rains of $1\frac{3}{4}$ inches in all have given us sufficient hay, and promises to give our bees sufficient honey to carry them through, and, I hope, give a small surplus. If all my bees were leather-colored Italians we should be busy taking off full supers. Now we have only 3 colonies of them. They have extracting-tops on. They have filled top and bottom with brood and honey, while the best of blacks and hybrids have only commenced to work in the supers. Not one of these Italian swarms has been fed during the past two years, yet I bought honey and sugar and fed some 25 colonies of the blacks. In spite of all this I have lost 40 colonies, or half of my apiary. If I were able to get around I should try to raise some queens.

I believe one reason I have so few stained sections is because I leave the super on the hive until it is finished, putting the empty super on the top when the first one is about half filled. When I find the top one half filled I am quite sure the bottom one is finished; then I take it off, putting the top one on the hive, an empty one on it, then the bee-escape and the full super. I find the sections are filled sooner by leaving them next to the brood-nest until finished; yet, so far as I know, other honey-men here follow the plan described in the A B C of Bee Culture.

A. E. WHITE.
Pala, Cal., May 28.

[I did not think it possible for you to bleach the faces of those sections where the stain or propolis or dirt went *clear through* the cappings; but it is something to be able to bleach all other discolored combs.—ED.]

DO DRONES SERVE ANY USEFUL PURPOSE OUTSIDE OF FERTILIZING QUEENS?

Is it proper in comb-honey raising to make war against all the drones, or is it essential to the well-being of the colony to have a certain number of drones in the hive? I have 100 colonies for comb honey, and I have trapped, and killed otherwise, all drones whenever I came across them, as I considered them worthless, and my neighbors raise enough to fertilize all the queens in the county. Some bee-keepers here claim that the bees work better if they have some drones in the hive.

Pomona, Cal.

M. R. KUHNE.

[In producing comb or extracted honey it is not thought that the presence of drones in a colony is essential to their best efforts. Nature undoubtedly supplies the hive with male bees in the early spring, so that they will be in readiness when swarming takes place, and when there will be a surplus of young queens to be fertilized. If drones serve any other useful purpose in the economy of the hive, it

is not known to the profession. But we do know this: That some say that a large number of drones unnecessarily incites swarming; and why should it not?

I do not know that it is profitable to trap the drones just for the sake of killing them; but I would consider it a good practice to see that all combs in the yard are exclusively worker. Sometimes foundation stretches in drawing out, and the cells are made oblong near the top-bar. All such combs should be used for extracting purposes, if used at all. Rather than let them get into the brood-nest I would melt out such combs, put in foundation again, and wire so it would not sag.—ED.]

WHY BEES DO NOT START DOOLITTLE QUEEN-CUPS.

In raising queens per Doolittle plan, is it usual or not to have the colony refuse to start the cells unless they are first started by a queenless colony or by being made queenless themselves? I have prepared a colony according to directions; but every time the bees removed larvae they also removed larvæ and royal jelly when given that way; also when transferred—baby, cradle, and all. The queen is a so-called hybrid, and was raised in 1849. I tried them a number of times, and finally made them queenless, and induced them to start about 40 per cent of cells given; then I returned the queen to the lower story, and they are finishing up those cells nicely, but will not accept any new ones. I am at a loss to know how to proceed unless I use queenless colony right along for cell-starters, and this appears to be too much trouble; besides, it makes a lot of dissatisfied bees which have to be returned and renewed frequently or they will not build well. W. R. L. DWYER.

[As you say nothing about feeding, I take it that you have omitted a very important essential in the matter of cell-starting. A normal colony with a queen out of the honey sea-will do nothing in the way of starting cells unless they are stimulated by feeding a little syrup daily. The best colony to start cells is one having a queen that it is trying to supersede; and even this should be fed a little daily. We sometimes find it advisable, under some circumstances, to use queenless colonies for starting cells; but even then we always advise that stimulative feeding, if no honey is coming, should always be practiced. Of course, during the honey-flow or during the swarming-time such feeding is entirely unnecessary.—ED.]

DAMPENING SECTIONS.

Your way of dampening sections is too slow for me. A much better way is to take an old tin can, hang it up, punch a small hole in the bottom, and take about 40 sections in your hands at once, and let the small stream run across the groove, and the work is complete.

Benson, W. Va. ABBOTT CLEMENS.

[I do not remember just what method we have given for dampening sections; but it is our rule to pick up thirty or forty, as you speak of, and hold them in the left hand, edges

up. We then take a tin cup filled with water, and pour a small stream right over the V cuts, drawing the cup along slowly as the stream runs down. This is very quickly done, and is quite effective. Another way is to lay the sections down flatwise on a table, V grooves up; then with an ordinary sash-brush, dipped in water, paint along the V grooves. Your tin can filled with water would work nicely; but a tin cup does not require any special rigging, and is practically just as good.—ED.]



H. J., Kan.—Referring to what is said in the A B C book in regard to artificial swarming, I would state that nearly all the old bees will go back to the old stand; but as a rule enough bees will stay with the brood in the nucleus to take care of it. It is now our practice to put the most of the bees with the nucleus on the *new* stand, because we assume that a large portion of them will go back. By proceeding thus we get an almost equal division of bees. But the nucleus on an old stand will have few young bees and nearly all old bees. The one on the new stand will have mostly young bees and brood. Yes, you can introduce a queen to either nucleus. We very often introduce the queen at the time of making the division; but, of course, it is very necessary to make sure that the queen is not introduced to the nucleus that has the queen.

R. F. W., Ont., Can.—So you desire to change Quinby closed-end frames with hooks to Hoffman—or, rather, you want to know if I would recommend it. If your bees are on Quinby frames, and the propolis is very bad, I would advise you to keep them on such frames and not change to the Hoffman. I still admire the Quinby frame, and on many accounts like it better than any thing else I have ever seen; but, like every thing else, it has its objections. When I came home some ten years ago I was enthused with self-spacing frames. I should have recommended the adoption of the Quinby instead of the Hoffman; but the former could not be used in the ordinary hives that had formerly had Langstroth hanging frames, and it seemed to me, all things being considered, that the Hoffman would be the best one to adopt, because it was partly closed-end and because it could be used in the standard Langstroth hives that were and are used almost universally throughout the United States. But if the Quinby frame could have been used just as easily in such hives, you may be sure I should have recommended to our firm the adoption of those frames. No, sir; to any one who has bees on Quinby frames, and who would contemplate changing them into the Hoffman, I would say, "Don't do it." Other things being equal, I should prefer the Quinby; but, unfortunately, other things are not equal—that is to say, they can not be used in standard hives.



So far in our locality we have had of late a predominance of north winds, with an occasional shifting around to the south, followed by copious showers. But north winds generally forebode no good to the honey-producer.

IN the *American Bee-keeper*, Mr. Harry S. Howe, the young man who had "too much bicycile" in Cuba, and who is convalescing slowly, says that black brood is found even in Cuba. Mr. Howe made a special study of bacteriology while at Cornell, and while at the hospital in Cuba he has been availing himself of the privileges afforded by the laboratory of that institution, and while there diagnosed certain samples as black brood. It begins to look now as if black and foul brood were very near relatives—at least, where one is found the other is likely to be.

ANOTHER WAY OF FINDING A QUEEN IN DIFFICULT CASES.

ANENT finding queens, a correspondent suggests that in bad cases the colony be moved temporarily to another stand, and an empty hive be put in its place. In an hour or so the flying bees will have left the colony, taking the major part of the old bees. The decimated condition of the colony, together with the fact that the old bees are gone, makes it easy to find her majesty, he says. It strikes me that, to lift the old colony off its old stand, and tote it off a rod or two, would involve considerable labor. I would rather hunt for her, I think, in the good old fashioned way, a second time. I do not think I ever missed finding a queen at the "second hunt," especially if I call an assistant to help me scan the comb.

CUTTING RED CLOVER AT THE PEAK OF THE HONEY YIELD.

I CAN imagine how the Coloradoans feel when the ranchers begin to cut the alfalfa at the peak of its best nectar secretion. Yesterday while I was at our out-yard it was with considerable dismay that I saw a seventeen-acre red clover field, bordering the lot of the bees, being cut by the farmer. The bees were fairly swarming on the blossoms; and as we had had no honey up to that time, and the colonies were almost on the verge of starvation, you can imagine how I felt. In two days' time the seventeen acres was cut, and there are dozens of other similar fields within bee range that are sharing the same fate.

White clover having failed us entirely we look to the basswoods, which will be out in a few days. But these do not promise much.

THE BEST SMOKER FUEL, AND HOW TO USE.

ALL things considered, I have come to the opinion that planer-shavings or handhole sawdust—a stringy kind of excelsior made by

means of a wabbling saw—makes the best kind of smoker fuel—the most lasting and the densest smoke; but in order to get good results one must throw in but a very little of the shavings, light a match, and work the bellows until the fuel is reduced to live embers. Throw in some more, and treat them in the same way. It is then possible to cram in the planer-shavings, pushing them down hard. Next fill the nozzle, in the same way, snap it back into place, and we are ready for an hour or two hours' work. If the smoker is kept full there is no blowing of sparks into the hive.

This treatment is especially adapted to the Crane smoker, for it has a powerful direct blast. It may also be used for the Bingham and Corneil; but with either of these less cramming of the fuel is advisable.

CANKER WORMS ON THE BASSWOODS ; ANOTHER PEST.

REFERRING to the canker worms mentioned editorially in our issue for June 15 I learn that Prof. W. J. Green, of the Ohio Experiment Station, Wooster, says that these pests will undoubtedly come back next summer; that, while the hard rains would dislodge the worms and interrupt them for the time being, he thinks spraying or poisoning will have to be resorted to in order to destroy them.

We are now finding in our locality another pest on the basswood-trees. At the base of the leaf-stalk on some trees there is a drop of whitish-colored mucus about the size of a bean. In this drop there will be enveloped one, two, or three tiny bugs, the bodies of which are not much larger than a common pinhead. The bugs are white, having a very prominent anal opening that seems to be almost telescopic, extending out like a miniature trunk. These pests attack the leaves of the trees. Some basswoods will have these "gobs" of mucus scattered all over the tree. We have written to Prof. Green for particulars as to what they are.

In addition to what Ernest has said above, I will add that I have seen this mucus on basswood-trees more or less ever since I have been interested in bee culture. At first I thought it might be honey-dew; but the bees and other insects never touched it so far as I could discover. It seems to be most prevalent during very dry weather. I did not know until Ernest called my attention to it that there was an insect inside of every mass of this stalk that looks like spittle scattered over the foliage.—A. I. R.]

THE GLOBE BEE-VEIL.

SOME years ago, when I called on G. M. Doolittle we had occasion to talk about veils. We were in the shop, and I think he was picking out an extra veil for me, for we were about to look over some five-banders.

"Here," said Mr. Doolittle, picking up a globe veil, "is something I got from Mr. Newman. Of all the 'ornery' things, this is one of the worst, and I am surprised that Mr. Newman sells them; for usually, what one

gets from him is up to date, and of the very best."

It struck me a good deal the same way. A year or so afterward, owing to ill health, Mr. Newman was obliged to sell out, and we bought his stock, including some two or three thousand globe bee-veils. But this stock of veils we felt disinclined to take, because we thought they would not sell, and, besides, we didn't believe they were as handy and as serviceable as the old kind. But Mr. Newman assured us, as did Mr. York, that this was one of the best-selling articles they ever had, and we finally took the lot. After cataloguing it we were surprised to see how well it "took" with the general public. The demand has grown so enormously of late that I felt constrained to try one of the "ornery" things myself, and I was surprised to see how nice and convenient it was. Why, one can wear any kind of hat with it except a plug, and his face will be absolutely protected. Besides the convenience of wearing the every-day head gear that always feels comfortable, one has the added security, real as well as fancied, of having the veil held clear away from the neck, face, and head by means of the skeleton-like globe steel springs.

Yesterday at our out-yard, when two or three of the crossest bees made a dive for the back of my neck, I did not have the feeling that *perhaps* the veil was touching me at some spot where the rascals could get in a good jab. No, I had the satisfaction of knowing that those parts were invulnerable. At another time, when I received an onslaught from that hive of cross bees I wrote about, and which stand as guardians over the whole apiary against the intrusions of thieves, I had the pleasure of seeing (even though at close range) that my nose was a good big inch from the mesh of the veil.

While this veil is an "ornery" thing to look at, I must say that I have changed my notion about its general utility. I am not sure but if I were to work in the apiary day in and day out that I would use it exclusively; for one of the things I do like is to wear a hat I am used to. The ordinary cap will not support the average veil in a way that protects one properly, and I very often wear a cap, and with that the globe is just the thing.

EXPERIMENT STATIONS, AND THEIR ADVICE ON THE SUBJECT OF SPRAYING.

On page 403 of our issue for May 15 I referred to the advice of one Wm. Stahl, a vendor of spraying outfits, in which Mr. S., in the directions that go with his spraying-pumps, claims to have a "great secret"; and that secret (?) is to give the trees an "additional spraying" "when in full bloom," regardless of the interests of the bee-keeper, and directly contrary to the advice of the experiment stations.

Seeing which, the editor of the *Farmer's Guide*, published by the Guide Co., Huntington, Ind., took Mr. Stahl sharply to task. In reply, Mr. Stahl had the audacity to say that the editor of the *Guide* was "just a little bit

behind the times;" see GLEANINGS, page 403. To make sure of the exact attitude of the experiment stations of the country, the *Guide* next addressed a circular letter to seven experiment stations. In this it referred to the advice of Mr. Stahl, and added, "If we are behind the times, we want to know it, and know the safe, sure, and good way to catch up." Replies were received from five different stations, and they are published in the *Farmer's Guide* for May 26. As these are all so valuable I have thought best to place them in full before our readers, and here they are:

In reply to your inquiry of recent date concerning the spraying of fruit-trees when in full bloom, I will say that the comments of the editor upon the advice given by Mr. Stahl, in a recent number of *The Guide*, coincide with my experience and observation. In the first place, if the spraying is done to prevent the apple scab, no Paris green is necessary, and the application of the Bordeaux mixture should be made just as the leaf-buds are opening, or before the blossoms open. This has been clearly shown by Prof. Burrill, of the University of Illinois, whose ability along this line no one will question. Again, if the spraying is intended to prevent the ravages of the codling moth it would be impracticable, to say the least, to spray while the trees are in full bloom, as the moth does not begin her work until there is a prospect of something for her young to feed upon until the young apples are formed. It is also a well recognized fact that bees and other insects are essential to a proper fertilization of the blossoms, and it has also been demonstrated, by myself and others, that many of these insects are killed by spraying with the arsenites when the trees are in full bloom. J. TROOP,

Horticulturist, Indiana Exp. Station, Lafayette, Ind.

Some of the fruit-growers in this State hold very firmly to the opinion that much better results can be obtained, especially with apples, by spraying when the trees are in full bloom than by following the advice of experiment stations and spraying just before the blossoms open and just after the blossoms fall. There is a law in this State, enacted in the interests of the bee-keepers, which prohibits spraying trees with poison when in bloom. Some of the men who believe in spraying at blooming time declare that they would rather spray at that time and pay their fine than to comply with the requirements of the law. So far as I know there have been no tests conducted by experiment stations to show whether or not there is any advantage in spraying trees when they are in bloom. The experiment stations have persistently advised against spraying when the trees are in bloom. They have held the opinion that the diseases and injurious insects may be held under control effectually by spraying immediately before and immediately after blooming, whereas it has been shown that spraying trees when in full bloom kills the bees. It has also been shown that the brood in the hive may be killed by poison brought by the bees from sprayed trees. Since bees are killed in this way it is reasonable to believe that many insects which visit the trees when in bloom may also be likewise poisoned.

Your correspondent says that in the grape growing section of Nauvoo, almost every acre will be sprayed in full bloom this year. Investigations which have been made at this station show that there are many varieties of grapes which are absolutely self-sterile. They can set fruit only as pollen is brought to them from other varieties. Some varieties of grapes are strongly self-fertile, and need no assistance from other varieties in setting fruit. Still other kinds are still more or less imperfectly self-fertile, and are benefited by cross-pollination. The results of this investigation are reported in bulletins 169 and 157 of the Geneva, N. Y., experiment station. Other investigators have shown that a similar condition exists among pears and plums, and it is probably true that some varieties of apples are imperfectly self-fertile, if not completely sterile. It is also established that insects assist in cross-pollination. Therefore the fruit-grower who persists in spraying trees when in bloom may not only kill bees and thus destroy the property of bee-keepers, but he may also injure himself by destroying insects which assist in cross-pollinating the flowers.

At the request of some of the fruit-growers the last legislature amended the New York law so as to permit orchards to be sprayed when in blossom, under

the direction of the experiment stations at Geneva and at Ithaca, for the purpose of investigating the subject as to whether or not there is any advantage to the fruit grower in spraying trees when in bloom. Both of the stations referred to are planning experiments in this line the coming season.

S. A. BEACH,
Horticulturist, Exp. Station, Geneva, N. Y.

I believe it is the consensus of opinion among experiment station men as well as the majority of practical growers who practice spraying that it is not advisable to spray while the fruit-trees are in bloom. Our experience in spraying at this station, covering a period of nearly ten years, indicates that insect and fungous pests that are controllable by spraying may be as successfully dealt with by spraying just before and just after the blossoming period as by spraying while the blossoms are on. This tallies with the opinions gleaned from the work of other stations. For this reason it seems unnecessary to risk spraying during the blossoming period.

The dangers of spraying during the blossoming period lie in the possibility of injuring the bees and also the tender essential organs of the flowers. Observations by the writer upon trees sprayed while in bloom failed to determine just what injury may have been done to bees, and did not reveal any indication of injury to the flowers. It is also fair to state that I have read no account which has settled this question of just how much injury may be done in this way. Spraying during the blossoming period is certainly not at all a new idea, for it has been tried by many, is still advocated by a few, and seems to be advised against by the majority.

J. C. WHITTEN,
Horticulturist, Exp. Station, Columbia, Mo.

I am aware that a sentiment exists that spraying fruit-trees while in bloom is more beneficial than spraying at other times, but I do not think there is any ground whatever for such belief. There does not appear to be any reason why spraying a few days earlier or a few days later would not answer just as well, and there is good reason why the trees should not be sprayed while in bloom. I regard such advice as Mr. Stahl has given as very harmful. We can not dispense with the services of the bees in fruit culture; besides, we have no right to kill the bees, especially as no good will come of it. I have practiced spraying fruit trees for a number of years, and am satisfied that all the good results which the advocates of spraying in time of bloom claim will be secured by spraying just before or just after. I am quite sure that the advice which you will get from other experiment stations will be precisely the same, for it has been demonstrated that spraying when trees are in bloom is very harmful to the bees, and it has also been demonstrated that we can secure good results by spraying at some other time.

W. J. GREEN,
Horticulturist, Exp. Sta., Wooster, Ohio.

It is probably true that some varieties of fruit are sufficiently pollinated without the aid of bees, but the evidences of the necessity for their co-operation in many kinds of fruit-growing are, to my mind, unimpeachable. The entomologist of this station, Prof. H. Gai-mau, has himself observed a bee sucking up the poisonous fluid that had been sprayed upon a tree.

In view of the fact that most fruits can be effectually and apparently just as well protected from insect and fungous pests by spraying at other times than the blossoming period, it would seem to be the part of wisdom to safeguard so far as possible the lives of these industrious allies of the farmer and fruit-grower.

C. W. MATHEWS,
Horticulturist, Ky. Exp. Sta., Lexington, Ky.

The very fact that all the other experiment stations have spoken in the same emphatic way ought to settle the matter; but it appears that the station at Geneva, N. Y., proposed to go to the bottom of the matter, and we shall wait with pleasure the results of their experiments.

The *Farmer's Guide* is to be commended for the firm stand it has taken for truth and for the bees, and such action comes with all the more force because it is not a bee-paper. Bee-keepers should write the editor expressing their hearty approbation and inclosing an order for subscription. A good paper like the *Guide* should receive encouragement.

SPRAYING DURING FRUIT-BLOOM.

In the *Country Gentleman* for June 7, page 470, appears the following from the New York State Entomologist, E. P. Felt, entitled "Bees and Spraying—a Warning."

The Albany *Argus* of May 22 contained a brief account to the effect that many honey-bees had been killed at Medusa, N. Y., by visiting trees sprayed while in full bloom with an arsenical poison. It was stated that one bee-keeper lost his entire apiary of 100 hives, valued at \$500. The report was investigated, with the following results:

Several men sprayed their fruit-trees on Friday and Saturday, May 18 and 19, the former being a bright day. Trouble was first observed on the 20th. Of the condition of his apiary on that day, Mr. W. P. Makely writes:

"The sight that met my eyes was enough to paralyze any bee-man. In front of each hive lay the full working force of the bees. Some in clusters apparently dormant, and others wiggling about as if in great agony. With the appearance of the sun there was a general movement among the bees in an effort to get as far away from the hive as possible. Those that had the strength would try to fly, but could only succeed in making three or four feet before they would drop to the ground. The next day, Monday, the 21st, I opened a few hives and found all the workers gone, and a large amount of brood and but few young bees left. I think that most of the colonies will pull through, but our honey crop is gone and we can expect no swarm."

Mr. Makely estimates that practically all the field-workers were lost. Mr. Edwin S. Yoder claims to have lost between 80 and 95 per cent of his workers in his 90 to 100 colonies. Mr. Aaron Jennings has from 200 to 225 colonies, and the first serious consequences were observed on the 23d, when in the vicinity of more than half his hives he could scoop up handfuls of dead or dying bees. Orchards were sprayed on the 21st and 22d $1\frac{1}{2}$ miles north and the same distance northwest of this man's place. A large quantity of dead bees have been received at my office, and they will be analyzed for the presence of arsenic. The destruction was fearful, and there is every reason to think that it was due to poison thrown upon trees in blossom. There is at present a law prohibiting the spraying of trees while in bloom; and this deplorable experience certainly indicates the wisdom of its remaining on our books and being enforced to the letter. There is a strong sentiment in some sections of the State in favor of spraying trees while in bloom, but practically every economic entomologist contends that all insects can be controlled just as effectively by spraying just before or after blooming, and in many cases the result is much better. It has been demonstrated beyond all question by experimental methods that honey-bees can be poisoned by visiting sprayed blossoms; but this is the first case known to me where widespread destruction has resulted under strictly natural conditions, most probably as a result of spraying. This case will be closely watched.

E. P. FELT,
N. Y. State Entomologist.

If there ever was a provoking case this appears to be the one; and it seems to me the New York State Association of Bee-keepers' Societies should take a hand in it. Those who have been guilty of violating the law should be taught a lesson. If the bee-keepers of New York allow this to pass there will be other violations of a like nature; and the only thing is to make an example of these men to prevent others from doing likewise next spring.

HO FOR THE NEXT CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION!

THE following announcement, just received from the Secretary, will be self-explanatory:

Mr. Editor—Please allow me to remind your readers that the next convention of the National Bee-keepers' Association will be held in Chicago, Ill., during the G. A. R. encampment in the last week in August next, the first session to be held on Tuesday evening, the 28th, and three sessions on Wednesday and three on Thursday, the 29th and 30th.

The convention will be held in Wellington Hall, No. 70 North Clark Street, about a block and a half from the office of the *American Bee Journal*, and about five blocks directly north of the court-house. The hotel at which delegates may secure lodging, etc., is the Revere House, only half a block from the hall. The rates for lodging will be 50 cts. per night, and the proprietor has assured Mr York that good beds will be provided, but that several will have to occupy the same room. For (most) bee-keepers, such an arrangement is an "added attraction." It may be possible that this hotel will not be able to lodge all the bee-keepers; but its proprietor will do his best to see that it does. Each one should secure a lodging place as soon as possible after arriving in the city. Enough to eat can usually be obtained at reasonable rates.

It has just occurred to me that our friend, the editor of the *American Bee Journal*, George W. York, 118 Michigan St., would be glad to do any delegate the favor of securing a lodging-place for him or her if so requested. Of course, no bee-keeper will omit to enclose one or two "stamps for reply." I have not consulted with Bro. York about this, and may be "putting my foot" into trouble; but if the two stamps are enclosed I'll be ready to take the consequences. All who write to Mr. York should do so at least a month before the convention.

The program will probably consist of a paper at each session, and the remainder of the time will be occupied in asking, answering, and discussing questions. The papers will be by such practical apiarists as Dr. Howard, of Texas; R. C. Atkin, of Colorado; Mrs. Acklin, of Minnesota; Thos. W. Cowan, of London, Eng.; Herman F. Moore, of Illinois; and S. A. Niver, of New York; and the question-box will be in charge of such veterans as C. P. Dadant, Dr. Miller, and Geo. W. York, of Illinois; Hon. R. L. Taylor, of Michigan; Rev. E. T. Abbott, of Missouri, and O. O. Poppleton, of Florida.

I have been unable, as yet, to learn what railroad rates will be during the G. A. R. week, but presume they will be the usual low rates, which may be learned by inquiring of any station agent as soon as they get their instructions.

A. B. MASON, Sec.

I have personally seen the hotel and the rooms that have been engaged for the occasion. Considering the fact that the city will be especially crowded, I think Mr. York has done exceedingly well in securing for us the quarters he has.

THE HONEY PROSPECTS UP TO JUNE 28.

SINCE our call for reports of the honey crop in our last issue we have received several hundred, by which it appears that white clover is rather later than usual, and when these reports were made it was a little too early to tell definitely what the crop would be from this source. South of the Ohio River and east of the Mississippi there is promise of an average crop from various sources. Connecticut, New York, Indiana, Ohio, Illinois, Missouri, Iowa, Minnesota, and Wisconsin give very little promise of much clover honey, and not much encouragement for basswood. We have exceptionally fine reports from all localities in Michigan. Pennsylvania and Vermont also give promise of a fair crop. Two reports just received from reliable sources in Ohio and New York say the prospects just now are much better than they were two weeks ago. We are almost without information in regard to the West, although we have very favorable reports from Kansas, Colorado, and Nevada.

Here at Medina we have had very favorable weather since June 21; but up to that date our bees were almost without stores sufficient for brood-rearing. Now they are storing rapidly, and frequent showers give promise of a continuous flow from clover. Last year Missouri had an abundant crop of white clover, but it

appears to be in the doubtful list this year. A. N. Draper, of Upper Alton, Ill., reported a big flow from clover over two weeks ago, but much of it was likely to be spoiled by honey-dews when he last reported.

MARKETING HONEY.

WHILE it appears at present that there will not be a large crop of honey in the East, we can not tell yet what the total crop will be, so bee-keepers should be careful in marketing—in other words, use good judgment. One extensive producer, and honey-merchant as well, says, "Honey can get too high. This was the cause of so much adulteration last winter." While honey was bringing a very good price all last fall and early winter, some held for still higher prices, and have been obliged to sell recently for lower prices instead. Honey has a limit; and above that, no matter how scarce it is, it will not be consumed. We do not feel like advising our readers generally, but at present we would advise selling any time your honey is ready, if you can get a reasonably good price. Work your home market for all it is worth. Do not spoil the sale of fine honey by lack of care in preparing it for market. You have spent time and money in producing it, and it will pay you to make it as attractive as possible to the consumer.

DIAGNOSING PICKLED AND BLACK BROOD, AND WHAT IT IS WORTH.

I NEVER have any difficulty in diagnosing a sample of real *foul brood*. The symptoms of that disease are so marked that it is very easy for one who is at all acquainted with its characteristics to determine whether or not it is a case of *Bacillus alvei* (*foul brood*); but to decide between a case of black and pickled brood is not so easy, for the two look very much alike, and under some conditions they are alike so far as external appearances are concerned. Knowing that a good many bee-keepers had sent samples of diseased brood to Dr. Howard, I felt that we could hardly ask him to make such diagnoses without compensation, for he is not in any way connected with an experiment station or any government work; and a man of his attainments as a bacteriologist ought not to be asked to perform a difficult service of this kind, requiring years of preparation and study, for nothing. As yet I know of no one in this country who has been able to discriminate between one and the other absolutely. Black brood, as we know, is decidedly contagious—perhaps more so than foul brood, and quite as destructive. Pickled brood is a mild form of disease; but so far as I know it is not very destructive. Very often it will disappear of itself, and in any event a mild treatment will eradicate it entirely.

We will suppose that a bee-keeper discovers something in one of his colonies that looks suspicious to say the least. If he can know absolutely, by sending a sample to some competent expert, that he has neither black brood nor foul brood, this knowledge may be worth to him hundreds and possibly thousands of dollars.

Very recently a queen-breeder who has some 500 nuclei, and who is carrying on the business of queen-rearing very extensively, sent a sample of diseased brood, desiring us to wire him at once what it was. The sample came duly to hand, and I immediately wired back, "Not foul brood—possibly black or pickled brood." At the time of sending a sample to me he sent one to Dr. Howard also, and the latter very promptly wired him that it was nothing worse than pickled brood. This information was worth to him hundreds of dollars; otherwise he would have withdrawn his advertising, broken up his nuclei, practically throwing away a splendid trade in queens, at the same time ruining his business perhaps for all time to come. He had only one case in his yard, and that was promptly disposed of.

While we at Medina are perfectly willing to perform such services so far as we are able, because we have a journal and bee-keepers' supplies to sell, Dr. Howard can not afford to do them for the mere love of the pursuit. I wrote him, asking him what it would be worth to diagnose diseased samples of brood, and he replied that he thought he could afford to do it for \$2.00; and this I regard as very reasonable, considering that he may have to spend hours with the microscope; so I would suggest that doubtful samples be sent to Dr. W. R. Howard, Fort Worth, Texas (but until the 12th of July he will be at 3200 Locust St., St. Louis) with a letter of explanation, and don't forget to send the money.

In a letter recently received from Dr. Howard, he gives specific directions by which every bee-keeper can diagnose to some extent for himself. Of the three particular brood diseases he gives the following diagnostic signs:

Foul Brood.

Glue-like consistence of the mass, and the offensive smell.

Black Brood.

Jelly-like consistence of the mass, the absence of ropiness noticed in foul brood, and the peculiar sour-like smell.

Pickled Brood.

Always watery, turning black after being attacked with the mucor fungus—a black mold—and by placing the larvæ in a sterilized chamber, keeping warm and dark, in three or four days the white fungus of pickled brood appears. I nearly always place a few larvæ of every specimen of all kinds of dead brood. Foul brood and black brood are attacked with a fungus, though kept for months.

WM. R. HOWARD.

THE CARLOADS OF HONEY THAT ANNUALLY GO TO WASTE IN RED-CLOVER FIELDS FOR THE WANT OF BEES WITH LONG TONGUES TO GATHER IT; BREEDING BEES WITH LONG TONGUES; \$25.00 AND \$10.00 PRIZES OFFERED FOR LONG-TONGUED BEES.

Two or three days ago, after making a visit to our out-yard I made a run on the wheel around through the adjoining section of country to determine what the bees were at work on, as I saw they were flying vigorously from the yard in all directions. There was a red-clover field of 17 acres that was being cut. At the time of my last visit there were only about

four or five acres left, but bees were working just the same. I concluded there must either be more fields of red clover or that the bees were working on something else. Sure enough, within a quarter or half a mile I found several fields, making in all something like twenty acres, I should judge, of common red clover. In these fields were also scattering heads of white clover. Throughout the fields the bees were busily flying at work. They would first visit the white heads; and if there was nothing left in them they would next take the big red ones. By the way they hovered on the large clovers, alighting on them and then quickly leaving them, I came to the conclusion that they were not getting much from them. I accordingly watched several bees. First there came an Italian. It alighted on a head of red clover, and I carefully marked with my eye the flowerets or cells into which it ran its tongue. After the bee had left the head I pulled the same flowerets from the head the bee sucked from, and then with my thumbnail and fore finger I squeezed upward the ends, and out of the base of each floweret I forced a very small drop of nectar. I positively knew that the bee had gotten all the sweetness out of these flowerets it could. Whether it got *any at all* I could not say—probably not. But this one head of clover that I examined, and which the bee evidently left in disgust, contained enough nectar to have filled at least three bees. I squeezed out of all the flowerets of this head of clover a very large drop. I then applied it to my tongue and secured a good big morsel of sweetness. Probably other bees had visited this head. I know at least one did, and I am equally positive that this one bee extracted all the nectar within its reach from several of the flowerets of the heads. But even then the bee left enough to have staggered it and two or three more.

A great deal has been said in regard to the possibilities in the way of breeding bees with longer tongues; and when Dr. Miller, a year or so ago, talked about a glossometer—an instrument for measuring bees' tongues—I rather ridiculed him. But the one observation from the red-clover field, as above given, convinced me that common worker-bees probably do not get more than a tenth of the honey actually in the red-clover heads. If the bees could get all the honey, I doubt whether the basswood-tree or any other honey-plant in existence could anywhere near approach it in the supply of nectar.

There is not a bee-keeper but has observed the large amount of nectar that can be pressed out of the flower-cells of the big red-clover heads; and I suggest that some of our bee-keeping friends try the same experiment I did—watch a bee; and after it has got all the nectar it can from certain flower-cells, pull off these same cells and see how much nectar is still left.

If white clover is going to be so uncertain in the future, it seems to be morally certain that bee-keepers must move into basswood regions or else develop bees with longer tongues. If it were possible to breed workers with

tongues long enough to reach clear to the bottom of the red-clover cells, we might get tons of honey where we now get only hundreds of pounds. Then artificial pasturage in the Eastern States would reach a degree of importance that it never has yet, and never could have otherwise. It is a difficult undertaking to induce farmers to grow alsike clover in preference to the red, notwithstanding the former makes better hay. The farmer looks for *quantity*, and there can be no question but red and peavine clover do yield more hay to the acre than alsike.

As Grover Cleveland said, "we are confronted with a condition and not a theory." That condition is that farmers will grow red clover in preference to alsike. The only way to meet the condition is to breed bees with long tongues. That there is a great difference of bees in this respect has been proven over and over again.

No concentrated effort has thus far been made on the part of queen-breeders in general to breed long-tongued bees. J. P. Moore, of Morgan, Ky., has for years offered to his customers what is known as his "red-clover strain," and I have seen good reports of the performances of these bees. Years ago we had what we called our red-clover queen. Her colony during the red-clover season, and during the time when all others were robbing, would literally pack her hive full of honey. The reason was, they had long tongues, and could get the honey. We sent one of her daughters to Doolittle, and he pronounced the stock something remarkable. At the time we had her we did not realize her value; but to-day, if we could duplicate her we would give \$500 for her, because we doubt if her like has ever been known before.

Now, then, if we can get queens with long tongues we can, to a certain extent, control our honey seasons. Suppose, for instance, we have long-tongued bees, we could well afford to furnish all our farmer neighbors within a mile and a half of us all their red-clover seed free. Yes, we could afford to pay them a little bonus, for the sake of getting them to grow a clover rather than a hay crop. Twenty-five or fifty acres of red clover within the range of bees having *long tongues* would show some wonderful results in the way of big honey-yields.

Now, Dr. Miller, trot out your glossometer and your long-tongued bees; and to prove our faith by our works we will pay \$25.00 to the bee-keeper or queen-breeder who can produce the longest-tongued bees this season; and \$10.00 to the one who can furnish the next longest. Contest to close by the 1st of October.

As yet I have said nothing about *Apis dorsata*. In the first place, their tongues are but little longer than the tongues of ordinary Italians, and no longer, if measurements already recorded are correct, than the tongues of red-clover bees. As *Apis dorsata* probably could not be domesticated—that is, work and be handled in ordinary hives, I think we must look to the species *Apis mellifica*, our common worker-bee.



Blessed are they which do hunger and thirst after righteousness, for they shall be filled.—MATTHEW 5:6.

Suffer little children, and forbid them not, to come unto me; for of such is the kingdom of heaven.—MATTHEW 19:14.

I suppose our readers have all read, or at least nearly all, Sheldon's book, "In His Steps;" for probably no other book since Uncle Tom's Cabin has made such a stir in the world, and has been read so universally. If you have not read it, get it at once, let the children read it, and lend it to the neighbors. When it is worn out and lost, get another and keep it going. Of course, the book is not perfect. Sheldon would not be human if his book were without faults. But never mind the faults. Consider the good things in it. When I first read it I remarked to Mrs. Root, "This writer has undertaken a tremendous task. His conception is a wonderful one; but, as I suspected from the start, he is not equal to the task, and, for that matter, to living human being, nor any that ever has lived, is really able to say what Jesus would do in all emergencies." Notwithstanding, Sheldon has done a wonderful thing for humanity; for not only has the book attracted the attention of the whole wide world, but a great part of this wicked world has been trying to put its teachings into practice. We may err just as Sheldon did in our crude conceptions of what Jesus would do; but I am sure the dear Savior is pleased, even with our bungling efforts in trying to follow "in his footsteps." May the Lord be praised, he has not only promised to guide those who are hungering and thirsting after righteousness, as we have it in our text, but he is guiding us.

One of our religious papers has seen fit to take exceptions to the way in which the expression "What would Jesus do?" has been brought into common every-day use; and they objected because it was dragging down a sacred name in an irreverent and almost blasphemous way. One of the instances they mentioned was that different tradesmen, in their advertisements, declare they would treat their customers "as Jesus would do," and they went on to say that even a barber had put up a sign saying customers would be shaved just as Jesus would do it. Now, I think the religious editors are wrong. I am glad to know that the grocer and the barber had found out that there was a strife among business men to be fair and right. After some of the experiences I have had with barbers, I should be very glad indeed to find one who is even *trying* to conduct his business as Jesus would have him do it; and when this spirit gets among the small matters of daily life, you may be sure it will ultimately get among the great ones.

Last week I felt like taking a wheelride. Mrs. Root and the rest of them declared it was out of the question so short a time after

our big rain ; but I have had more experience in such matters than any of them. Fifteen or twenty miles south of us the land is sandy and gravelly ; so I took the train to a point nearest where I wanted to go. They told me at the ticket-office that this particular train did not stop at Easton, and that I would have to go four miles beyond. I have learned, however, that sometimes unexpected chances favor us ; so I asked the conductor if it was possible for him to let me off at Easton or near there.

"Why, yes, although it is contrary to our usual custom. To-day we have a special matter that will cause us to stop at Easton. You can get off as well as not."

I told him I had paid my fare to Warwick, four or five miles beyond. He did not offer to return what I had overpaid, and did not make any suggestion as to how I could get it back. He simply stated I could get off at Easton just as well if I wanted to. But I should like to see even railroad companies as anxious to refund, when the matter is clearly their own mistake, as they are to get a few cents more when it comes the other way. May be it would be expecting too much of a railroad company to undertake to do business as Jesus would do it ; but I have faith to believe the time will come when we shall see something of the kind. I got off at the station, and started off on a road that was comparatively new to me. I was obliged to make some inquiries of people I met. By the way, when I am out wheelriding through the country I make it a point to speak to everybody I pass—that is, when I can do so without hindering them. I like to talk with boys and girls; I like to compliment people on their nice gardens and on the beautiful flowers in their door-yards. And, by the way, I never enjoyed flowers before in my life as I do this summer. Some people may think me a little queer, it is true, because I have a salutation for every one. But I can not help it if they do. If Jesus were traveling through our beautiful State of Ohio he would speak to people right and left—certainly to every child he met. When I was in Bermuda I noticed friend Morrison seemed a little surprised that I was in the habit of saying "good morning," not only to the schoolchildren, the colored men and women, but even to the high-toned folks who came to Bermuda to spend the winter. I finally spoke to him about it, and he said no doubt some of the rich people would think I was taking a liberty ; but to one who loves his fellow-man (as Jesus did, and *does even now*) it seems almost as if one could not well pass a human being, especially out in the country, without some sort of recognition. Of course, a nod is many times all that is necessary; but when I am wheeling I can slow up, without any trouble, enough to recognize the one I meet, and to say something, and get some sort of reply. Where people are out on the street or near the gate it is an easy matter to speak about their pretty homes ; and most of the homes through our State of Ohio have something attractive about them. With the recent newspaper accounts of outrages, women, when away off

alone on the road, are often a little timid about passing a man on a bicycle ; but a pleasant "good evening" oftentimes reassures them, and brings a pleasant recognition in return. Where the path is narrow I am also very particular that no woman shall step out of the path in order to let me by. I frequently ask them to keep in the path, and I will get around some way. I mention this to suggest to riders, old and young, that it is not out of place to consider "what would Jesus do," even when you are riding the wheel.

My first stop was at the pretty home of Mr. Christian Weckesser, near Marshallville, Wayne Co., O. Friend W. has recently located in a pretty ravine on his father's farm, near a little spring. He has even his greenhouse and hot-beds placed down under the trees. When I suggested so much shade was an objection, he said there was no shade till the trees leave out ; and after they leave out, the shade was just what he wanted. He does not have to whitewash the glass nor put up curtains as we do. Away up on the summit of the great hills (that are seen through a large part of Wayne Co.) he is growing beautiful crops ; and as most of his ground is away up above the valleys he has literally a "tiptop" (?) location for growing all kinds of fruit. His family of five little ones have a grand place to play on the steep side of the canyon, as I should call it, and they can play in the soft spring water if they feel so inclined, during the hottest day in summer.

As I wanted to make the experiment station at Wooster before night, my call was a brief one. As Mr. Weckesser is not on a main road I started off across the lots on my wheel. Pretty soon I met his oldest girl coming from school. The father told me she had taken a great interest in getting an education. I said, as I met her, "I don't think you know me, my little friend, do you?"

"Yes, I do, Mr. Root," she replied, as she looked up at me a little shyly, but yet with a most winning smile. I remembered meeting the children on a former visit, but I should not have known this one. I have told you of late how a glimpse of a beautiful flower often gives me thrills like sweet music ; yes, and I think I have often told you that the faces of the boys and girls frequently stir me much in the same way. At the time I mention I had had an exhilarating wheelride over those grand hills. I had a pleasant talk with the father and mother about their home, their children, the flowers, and the crops, and my heart was warm with love to God and to all my fellow-men. The father had told me about this child's special desire to get an education. His own sister was her teacher. She was prettily attired, as school-children usually are, and her bright face gave me a thrill of joy. It brought to mind vividly what Jesus said of little children, especially the closing part of the text I have chosen—"for of such is the kingdom of heaven." There are thousands of such little girls scattered all over our State. They are often out on their way to school, or on other errands, sometimes off across the lots, and unprotected ; and I believe that, as a rule,

most men, or at least anybody who has any sort of right to be called a man, would give his life in a minute to protect and defend a little girl, yet (God knows I hate to say it) these very little girls—yes, even in Ohio—have in recent times been assailed by wretches in human form when no one was near to protect them. If for no other reason in the world I would banish saloons from our land, to protect these children from human fiends or drunken fathers. Yes, drunken fathers have struck down innocent children like this one when they had committed no fault at all, and just because the father had permitted the Devil to take possession of him. The thought of that pure bright childish face has followed me, and follows me still. It is only a type of thousands like it in our land, needing the protection, not only of the mothers, but of all good men. These children are as pure as the sunlight. They are soon to grow up and bear the burdens and cares common to motherhood. Shall they be struck down and trampled under foot when they are doing the very best they know how? when they are giving all their feeble strength and last drop of blood to defend the home and children? Shall these mothers be persecuted and brought down to an untimely grave just to enable *brewers* and *liquor-sellers* to make money out of their horrible business?

I expected to make Wooster before sun-down. When I reached Smithville the sun was not very high, and I was somewhat tired of riding over the hills. I passed a pretty little church, and dozens of boys and girls neatly clad were passing in and out. One of the children told me the occasion of it was they were going to practice that evening for children's day. As I looked over the groups, differently dressed, and with different expressions on their faces, it made me think of the flowers once more.

I decided to stay at the hotel over night. As it was past the time for my afternoon nap I planned to take my sleep first and then attend the children's rehearsal, for they told me visitors were admitted. I was shown to a very dainty pretty bedroom. It was not expensively fixed up, but every thing was neat and clean. I told the landlord I had been to supper, and simply wished to pay for lodging, as I wanted to resume my journey by daybreak. When he said it would be only 25 cents, I ventured to tell him that was not enough for such a nice clean room. But he smiled as he said that was the regular price, and that he preferred not to take any more. I told him I would remember him when I came that way again.

By the way, friends, did you ever think of the comforts that are scattered all over our land? Here am I, a stranger, away from home. For this small sum this room is mine for 24 hours if I wanted it so long. I can do just what I please with it as much as if I owned it. I thought of this as I pushed the sash up to the top of the window, and parted the curtains so the breeze could get in a little more freely and out of the open door. That children's-day gathering made me feel nobody in *that* town

would try to steal any thing while I was asleep, even if the doors and windows were *all* wide open. Then I wheeled the bed so my face was right before the open window; and, oh what a delicious sleep I had while the cool breeze coursed freely over my tired self! Of course, I had a good wash before lying down, with pure soft water out of a clean pitcher, and a nice clean soft towel. Oh, yes! I know we do not always find *every* thing like this at every country hotel; but at this time I not only thanked the landlord, but I thanked God for these things that add so much to our comfort and enjoyment.

When I awoke, the sun was down and it was dark. I wanted a drink of hot water, as I always do after a wheelride. Now, if I troubled the people at the hotel to get it for me it would make them quite a little trouble, and they would not take any pay for it either. I knew by former experience. So I went out into the street and walked down toward the little church. Pretty soon I saw a bakery with "Hot Coffee" on the sign over the door. I asked the woman in charge if she could give me a cup of weak tea. She said she could if I would wait until she made it on a gasoline-stove. I told her I was in no hurry, only I wished to go over to the church before the rehearsal was over. In a little time she brought a cup of tea. The cup was not quite full. She explained that, as I was in a hurry, she would bring half a cup at once, and the other half by the time I needed it. So I sipped it with my spoon, and finally told her she need not make any more, for that was all I needed. When I asked how much for her trouble she said she did not exactly know, so I gave her a dime; and when she started to get the change I told her that no change was needed—it was worth all that to start a fire for one cup of tea; but she replied, "Oh, dear! no. Five cents is my regular charge for a *full* cup of tea, and you had only *half* a cup. I don't think I ought to charge you quite five cents." At this I had a good laugh, and finally persuaded her to keep the *whole* of the five cents; but she would not take a cent more.

Now, friends, I have been telling you two little simple incidents, and perhaps you may wonder why I mention them at all. I have taken pains to tell them in detail to show you there are thousands of people, in the common walks of life, at least, who do really hunger and thirst after righteousness. I believe they really want to do as Jesus would do. This spirit is common among the women-folks and the children, if not so common among the men, and may God be praised for it. The majority of our people here in Ohio—yes, in the whole country—want to be fair and honest; they want to be liberal, to give full value for all they receive, just like the landlord at the hotel and the woman at the little bakery; and the children across the way at that little rehearsal, that I reached just as they were disbanding, are being taught that same spirit. May God bless the institution of children's day; and may he help us who are older to encourage this spirit among those children, of doing as Jesus would do; and let us remem-

ber that it is a thousand times more important we should teach these children to follow "in his steps" than it is to succeed with crops or domestic animals, or money-making of any kind; and it is a thousand times more important, also, that we should *wrest the reins of government* from the hands of these wicked men who have no regard for our children or any thing else but money-getting. If there is any class of people in this world who should be trying from the bottom of their hearts to do every day *as Jesus would do*, it is the ones who make our laws, and manage the affairs of government. In at least one town in our United States the people decided a while ago to have a Christian marshal instead of the kind they had been having. This Christian marshal happens to be a subscriber to GLEANINGS, and I have obtained his permission to publish the following letter for the encouragement of other towns.

Mr. A. J. Root:—You have done me so much good by your Home talks I must tell you the good news from Marion. Six saloons have run here for many years. Last year we elected three temperance aldermen, but could not put out saloons. This year we elected one more, which makes four temperance aldermen out of six, so saloons will go out of Marion the 21st of June, 1900.

We have had two different city marshals here in the last year. The aldermen refused to confirm either of them, therefore the mayor had to appoint them every month. They stood in with the saloons, and did not enforce the law; so at the last election the temperance people of Marion asked me to take the office, promising me their support. I took the appointment the 14th of May; was confirmed by all the aldermen over five or six other applicants, and I had been here only 14 months; but the people knew that I was strictly temperate, hence my appointment.

The other day a saloon-keeper said I had done more in one week than the other marshals had done in a year. I am sweeping clean as I go, in a mild and pleasant manner, but firm; I favor none, yet, Bro. Root, it is not that is doing it—it is the Lord. I ask him to go with me in all my duties, remembering that the Lord and one make a majority.

R. H. HUMPHRIES,
City Marshal.

Marion, Ill., June 4.

CHRISTIANS FOR MAYORS, POLICEMEN, ETC.

Now may I say to the people of your town, friend H., that the wets will go right to work to get you out of office if they possibly can. No hook or crook will be left untried; and if temperance and Christian people get an idea that the victory is won, and that they need not bother themselves *particularly* about it hereafter, they will get into the background again. Nobody knows until he has had a hand-to-hand conflict with the powers of evil how wily Satan is.

Along with the letter from our good friend Humphries came two newspaper clippings which I take pleasure in giving below. The latter was taken from a local paper printed in Marion.

Our former fellow-citizen, R. H. Humphries, is now city marshal at Marion. Mr. Humphries is not a very fluent speaker, but his magnificent physique will in itself serve as a strong deterrent to evil-doers. Besides, he is a determined man who will do his duty without fear or favor. The people of Marion are to be congratulated on the selection, and the lawless element will have to "toe the mark" while Henry wears the star.—*Galatia Monitor*.

City Marshal Humphries played a funny trick on one of our saloons the first Sunday he was out with the star and club. He stepped up to the rear door of Askew & Cash's saloon, and, giving a peculiar tapping, awaited results. Presently the door was cautiously

opened, and the star-and-club man socked his big foot in the crack thus made. He quietly opened the door and stepped in, where lo! he saw several of "the boys" refreshing the inner man with the juice that sparkles and beads and foams. No, the boys didn't any of them break their necks to shake hands with nor set 'em up to Humphries; but when the little bill was presented to Askew & Cash on a plea of guilty, it read: "Thirty dollars and costs." That's more than it used to cost to shoot a man here.



A VISIT TO THE OHIO EXPERIMENT STATION.

When it was fairly daylight (even before four o'clock at this time of year) I was on my wheel again, and almost alone, in one sense, for rarely did I see a farmer up at that early hour. I wonder if farmers are not taking things a little easier nowadays than they did fifty years ago. Most of them have fine comfortable homes—at least through the part of Ohio where I rode that morning. In fact, they have every thing in such good order perhaps it is not *necessary* (any more) for them to get up before sunrise. For my part, however, I believe I shall always want to be up at the peep of day, and then take a rest when the sun is hottest.

I was afraid I should not be able to find any breakfast in the large town of Wooster by the time I reached there; but one enterprising restaurant was already open; and for a very small sum I had a breakfast that should prompt any one to give thanks *after* the meal as well as *before* it.

For the first time, I think, I rode all the way up the great hill that leads to the greenhouses at the station. My good breakfast may have had something to do with it, and also my light Cleveland wheel, with its gear-case over the chain. I dropped my chainless for this wheel about a year ago because the makers would not give me a chainless as light as the present one I am riding. They insisted on making me use a wheel that would carry a man weighing 250 pounds, while I weigh only half that. This light Cleveland wheel I am riding, with a rubber case entirely inclosing the chain, will run as long without oil, I believe, as the chainless.

When I reached the greenhouse a small boy said he did not think anybody had got around yet, but he guessed he could show me where I could get inside and look at the plants. Very soon a bright young man was showing me around. Then I ran across another one, who was formerly in my employ; and later still a bright young boy who was brought up near my home, and has always been greatly interested in high-pressure gardening. He has just secured a place in the service of the station.

I can not tell you of all the beautiful things in that greenhouse. It is mostly occupied with tomatoes, and they have been selling them for several weeks past. Their market is the city of Cleveland, and they get 20 cts. per lb. for them. Prof. Green told me later the

prices they are paid for hot-house tomatoes near large cities will pay very well for building a house and running it exclusively for tomatoes. They are certainly as fine as if not finer than any grown in the open air. I know this through the kind courtesy of Prof. Green's good wife, who invited me to their home to dinner.

The flower that took my attention more than anything else was the gloxinia. The specimens were grown from seed; and one package of seed gave variations that were not only wonderful in their beauty, but as you examine first one and then the other you can hardly tell which is the loveliest. Oftentimes I have wondered and pondered that a little insignificant-looking seed should have wrapped up in its little self the elements of such wonderful beauty; and when we see that there are hardly any two exactly alike, it makes one feel (especially with the gloxinia) as if nature had been using her wonderful skill to hold up before your face one form of tantalizing beauty and then another, until you are almost bewildered with the gorgeous coloring and graceful and fantastic shapes of her creation. We are trying to grow gloxinias from bulbs in our own greenhouse. They do not just like our method of treatment, or something else is the matter. A bougainvillia vine was arched over the entrance leading to one of the greenhouses, and it brought forth exclamations of delight. What a very bright and sprightly plant this is! It makes one think of a lot of butterflies nesting among the green leaves. We have two small ones on our grounds doing fairly well. Begonias of all kinds were growing, some of them into small trees, in the station greenhouse; but our begonias do not thrive for some reason. We have tried them in the sun and out of the sun.

Our Ohio experiment farm is so large Prof. Green's home was nearly a mile away. He has charge of all the fruit. I found one of his men bumping plum-trees, and I learned afterward that they were just about through, for they have got the curiosities morning after morning so long that now not enough were left worth going the rounds any more; and many of the trees were bearing magnificent crops of plums, with scarcely a stung one in the lot. Why, on some of the trees the plums were piled together like bunches of grapes, and the trees would break all to pieces if the plums were not thinned out. Luscious cherries were already ripe. One of them I liked so well I am going to get some trees for my own planting. It is called the Northwest. It is of very good size, beautiful shape, and fully sweet enough to eat out of the hand, without any sugar; besides, it is ripe just about with the earliest strawberries. Prof. Green also recommended the Louis Philip, just a little later. They have two new hardy plums which he recommended—the "Reed" and the "Richland." The Northwest cherry was purchased of Stark Brothers, Missouri.

Some of the peach-trees are going to bear very fair crops. The peach yellows has never yet made its appearance at the Wooster Station, although it is almost all over the State.

All the fruit is given clean level culture—just bare ground between and around the trees.

Prof. Green has a new way of training grapes. He objected to the Fuller system (and I do too), because one can not get through the trellises. His new plan is to support the vines and wires so high up on posts that one can walk under them, letting the clusters of fruit hang just over your head. The posts are iron pipe. This can often be bought from piles of old iron. Across the top, just so as to clear your head, is a cross-piece, something like that on a telegraph-pole. The pieces are 2 feet long. The central wire runs under, and the two outer wires on top. These outer wires are stapled clear out to the outer upper corner. The vines are then trained along the central wire, with the side shoots carried off over the outside wires. With this arrangement one can cultivate under the grapevines both ways (with a small horse), just as you would among the fruit-trees, and nothing hinders you from going crosslots in either direction through the vineyard. While commercial grape-growers may not fancy this arrangement, it strikes me as being just the thing for home grounds.

It would take a page or two to tell you about the experiments in growing wheat. Our first visit was to a plot where potatoes had been grown the year before. This ground was so rich that it needed nothing more to make a good crop of wheat; therefore in some places the wheat fell down worse where fertilizers were applied than on the "nothing" plots; but as a rule the chemicals gave a marked increase. At other places on the farm they have grown wheat year after year for a dozen years or more on purpose to exhaust the soil so it absolutely could not grow wheat any more worth harvesting. On this ground the "nothing" plots showed nothing. There were just a few straggling plants with poverty-stricken heads of grain; but right beside these plots, with a sharply defined line, was magnificent wheat under the influence of only a very small quantity of just the right kind of chemical fertilizers. They are to have some photographs of these plots so as to make it plain that on many of the exhausted farms of Ohio, where wheat can not be grown so as to have a crop worth harvesting, magnificent crops may be secured by the application of the proper chemicals. If I am correct, each farmer must ascertain for himself what chemical is needed to give the best results. Permit me to digress a little right here.

Yesterday, June 18, I visited the sub-station at Strongsville, only a dozen miles due north of my home. Our station selected this spot because it was some of the poorest land in Ohio. The ground was not fit for any thing until it was underdrained and manured. Well, Mr. Mohn, the manager, showed me plots of wheat last evening that were just beautiful, with the "nothings" beside them literally nothing. The only thing that made the crop was 8 pounds of dissolved boneblack. I am sorry I did not get the dimensions of the beds used for tests; but I do not think they were more than 20 feet wide by about 100 long.

This boneblack costs only \$16 a ton, so I am told. I think Mr. Mohr told me 400 pounds to the acre is enough to grow a good crop of wheat; that is, \$3.00 or a little more for chemicals would give a splendid crop where otherwise there would be nothing worth harvesting. There were other plots where nitrate of soda, muriate of ammonia, and various other chemicals, were added to the boneblack; but he agreed with me that they did not seem to be much if any better. On this particular soil the nitrogen and potash were not needed—only phosphoric acid. Before we got through I saw where an experiment was made with wheat bran; and this too gave almost as good a stand of wheat as the boneblack, but I think rather more of it was used.

The experiments at this sub-station have for two years shown a great saving in expense by using home mixtures; and, to come right down to the facts in the case, oftentimes no mixtures are needed at all. When the farmer finds out just what he wants, one single element may do him just as much good as a mixture. The thing for him to do is to *find out* just what is required, and not waste his money by putting something on his land that it does not need. Do some of you smile to think I am favoring chemical fertilizers? Well, I am. But, hold on a minute. The plots fertilized with barnyard manure are just as good, or very nearly so, and the barnyard manure, to a certain extent, costs the average farmer almost nothing. Let him save every bit of it; then if he still needs fertility, let him buy the chemicals.

Prof. Green and his good wife are not only interested in every thing pertaining to the farmers' crops, but they are deeply interested in the welfare (moral and spiritual) of the farmers' children. And why shouldn't they be? They have quite a family of bright interesting children of their own, and the children were along with us listening to our talk. Paul, the oldest, has been reading GLEANINGS. His mother said he was very anxious to ask me some questions if I was willing.

To be sure, I am willing, dear children, all you who read GLEANINGS; and it gave me a new thrill to know that some child or growing boy wanted to know something I could tell him. One thing he wanted to know was how to find a bee-tree. Then we talked about opera-glasses, cheap ones (you need something of the kind if the tree is a tall one); then we talked about kodaks, bicycles, and lots of other things. The younger ones were in the berry-patch picking berries, and discussing the respective merits of the new varieties.

Before I was ready to go it was half-past two; and to get home that night I should have to catch a train 17 miles away, and a strong north wind would be right in my face every mile of the way. I do not like a wind in my face while wheelriding, and I do not like a north wind any way you can fix it; but if it is behind my back I do not mind it so very much, because with a good road I can usually travel *faster* than the wind does. But what can't be cured must be endured, and so I started out. When within three miles of my desti-

nation I was so used up I slowed up and concluded I would not try any more. Then the thought struck me that possibly the train might be late; so I decided to do the best I could without becoming too much tired, and take the chances. The train was fifteen minutes late, and I reached the station with five minutes to spare. The ride was rather more than I like to take against the wind; but when I got rested up I took the trip to Strongsville I have been telling about, and made 12 miles, coming home, with a north wind at my back, between sundown and dark, and I enjoyed every mile of it. Now, may be I had better tell you that I had baked beans for dinner, and a few more of them for supper, before I took this twelve-mile ride. Why, it seemed as if my wheel went of itself, and it was just fun to fly at breakneck speed up hill and down, without even being aware that I was exerting my strength of any account. I not only had the north wind at my back, but I felt that wonderful "second wind" thrilling every fiber of my being; and, more than all and above all, I felt in my heart God's love, and a love toward all humanity that live and breathe under God's clear sky, in the farmers' homes scattered all over our land.



WHAT CAN WE PLANT OR SOW DURING THE FORE PART OF JULY?

Almost every thing. If frost comes early it may be a little late for lima beans unless it is Wood's Improved bush lima. This will be all right; also all kinds of wax beans and all kinds of white field beans. In fact, if you plant them now they will be pretty sure to escape the bean-weevil. Beets for table use will be all right, and you can get good sized beets and mangolds for stock. With good plants you can grow any kind of cabbage. All kinds of carrots will be all right. You may not get full size, but that does not matter if you put the seed a little thicker. It is just the time to sow cauliflower seed to get the very best cauliflower that can be grown at any time of the year; and it is just the time to put out all kinds of celery if you have good plants. Early sweet corn will come in just right, and if you take my advice you will put in some Country Gentleman if you want something finer for table use than any other that is grown in the world. It is just the time for cucumbers, either for pickles or for slicing; also for lettuce if you are careful to shade it with cotton cloth just before it matures so as to bleach it and keep it white. Melons will usually ripen if you use the earliest sorts, and you can still plant onion-seeds for growing sets. In fact, if you have any seed left over it ought to be put in for sets right off now. The sets will always sell, no matter what kind of seeds you plant.

Parsnips may be sown now, but they will not get to be very large. All the better, though, for table use. All kinds of peas will mature if they get through the hot weather. We sow them all through July, and seldom fail in getting nice peas. Peppers are all right if you can get some good plants. You can plant pumpkin seeds now, and get ripe ones of the Early Sugar variety. Rhubarb will make good plants this fall that will give stalks for pies next spring. Radishes may be sown all through the summer and fall. Oyster-plants will grow small roots, but they are all the nicer if you put them on good soil. Spinach is all right this month and next. Summer squashes do finely, but it is a little late for the Hubbard. You can still grow tomatoes on ground that is vacated if you have some good strong plants to put in; and it is just the time to sow Breadstone and Yellow Aberdeen turnip seed. The White Egg and Yellow Top and Globe had better be put in later.

Finally, you can still plant potatoes if you have any old ones left in your cellar or can get them anywhere. It does not make much difference how much they are wilted or sprouted. If we have rains during the month, the potatoes will just "climb."

Now, do not let your garden grow to weeds because you have already grown a crop on some parts of it. Spade under the old peavines, lettuce gone to seed, weeds if there are any. Rake it over and get on something else. Do it to-day or to-night, even if you have to work a little by starlight. It is not much work to keep the garden growing something valuable every day and every hour, and just think how much better it looks.

Somebody asked what kind of honey-plants could be sown now. Why, bless your heart, it is the very nicest time of the year for buckwheat, crimson clover, and turnips, seven-top or the other kind; and the buckwheat gives you a honey crop and a crop of grain this fall. Crimson clover gives you a honey crop, and a crop of seed worth at present \$5.50 a bushel, next spring; and the turnips that you do not pull up for table use will come up in the spring, and produce splendid greens for the table if you want them; and if you don't, they will give a lot of honey when almost nothing else is in blossom. Now, if you like to see things grow, just "go in and win." We can still furnish seeds of almost everything I have mentioned.

Oh dear me! I forgot to say a word about strawberries. There is no nicer time and no nicer month in the year to put out a strawberry-patch than July. Use potted plants if you are a green hand; but if you have learned the trade, put out layer plants, and you need not have one plant die in a thousand. If you get your plants out in July you will have a good crop of extra fine berries next spring. Now, please do not say that I have said nothing about high-pressure gardening in this issue.

Oh, yes! one thing more. If you get this July garden started, keep the surface raked over nicely, as I told you about in GLEAN-

INGS for June 1, page 449—"level cultivation and dust mulch." We have been doing that same thing in our garden this summer, and it is less trouble than any other plan. The garden is always "a thing of beauty and a joy forever;" and, oh my! how the things do grow!

THE LOGAN BERRY IN CALIFORNIA; BELGIAN HARES, ETC.

I thought you might like to know that the Logan berry does well here. They are in market much of the time. I have been told that they do best when allowed to run over the ground. They seem like a dark-red, rather sour large blackberry. The Belgian hare is raised very commonly here in narrow quarters, and they increase with great rapidity. All I have seen were kept in boxes or wire cages.

Santa Barbara, Cal., June 16. L. W. DENSMORE.

WATER-WITCHING; WHAT THE U. S. WEATHER BUREAU THINKS OF IT.]

We clip the following from the *Monthly Weather Review*, issued by the Department of Agriculture, under the direction of the Chief of the Weather Bureau:

According to the *Scientific American* for April 7, 1900, a commission has been appointed in France to study all apparatus and method employed by sorcerers, water-seers, and wizards, who use the divining-rod, mineral-rod, exploring pendulums, hydroscopic compasses, and the other instruments which go by a host of other fanciful names. The French engineer, M. Barthélémy de Rollière, is the president of the commission. He will procure divining-rods of all kinds, including books, reviews, journals, reports of experiments, together with the names and addresses of the inventors of the alleged devices. All the facts and documents may be sent to M. de Rollière, care of Cosmos, 8 Rue François Premier, Paris, France. It is to be hoped that the findings of this commission will, once for all, settle the question of the divining-rod, not only for the discovery of water, but also minerals. In England, particularly, the water-diviner plies his lucrative profession without legal interference, and, strange to say, his dupes are often town authorities. The whole business is akin to that of the fortune-teller, the spiritualist, or any other charlatan, and it is strange that the exponents of such systems are allowed to pursue their avocations undisturbed by fear of prosecution. At present the victims are the only ones punished.

THE TRAFFIC IN TOBACCO.

No, you don't say half enough against tobacco. Nearly all the boys take the first step toward ruin from using the weed. Tell the grocers they are as bad as a rum-seller, only on a more common and easy scale, and some begin to see it. What a sham and shame to partake of the Lord's supper, then go into the store and deal out death and poverty in the different forms of the poison weed!

E. P. CHURCHILL.
Hallowell, Maine.

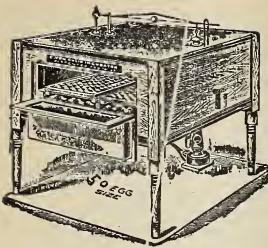
At the offices of the Anti-cigarette League it was said yesterday, in discussion of Willis Moore's order, that the Chicago, Burlington, and Quincy Railroad on some of its divisions had forbidden the use of the cigarette.

A merchant reported to the Anti-cigarette League that he had in his employ 75 men, of whom 8 were habitual smokers. He said that if the entire force smoked as the 8 did he would have to double the number to get the same amount of work.

Montgomery Ward & Co. have refused to employ boys addicted to cigarette-smoking.—*Chicago Tribune*.

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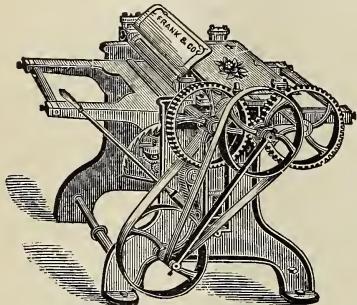


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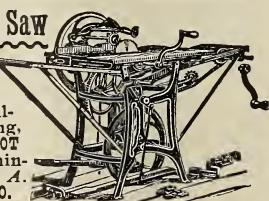
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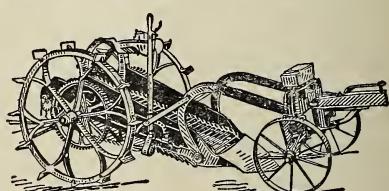
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